AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE OF PAGES
	1 | 8

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO.(If applicable)
0004	17-Aug-2001	W16ROE-1166-7518	

6. ISSUED BY	CODE	7. ADMINISTERED BY (If other than item 6)	CODE
USA ENGINEER DISTRICT, NEW YORK ATTN: CENAN-CT ROOM 1843 26 FEDERAL PLAZA (DACA51) NEW YORK NY 10278-0090	DACA51	**See Item 6**	

8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)		
	X	9A. AMENDMENT OF SOLICITATION NO. DACA51-01-R-0028
	X	9B. DATED (SEE ITEM 11) 20-Jun-2001
		10A. MOD. OF CONTRACT/ORDER NO.
		10B. DATED (SEE ITEM 13)
CODE FACILITY CODE		

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer [X] is extended, [ ] is not extended.

Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (If required)

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

A. [ ] THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. [ ] THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).

C. [ ] THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. [ ] OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)

The purpose of this amendment is as follows:

The proposal date is extended from 24 August 2001 to 4 SEPTEMBER 2001, 12 NOON, NY time, in Room 1841, 26 Federal Plaza, N.Y., N.Y. 10278. Revised technical proposals, inclusive of any responses to deficiency letters issued 16 August 2001, and price proposals are both due concurrently on 4 September 2001. Only those contractors who have already submitted a technical proposal are to respond directly to the government.

(CONT'D)

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print)		16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)	
15B. CONTRACTOR/OFFEROR _____ (Signature of person authorized to sign)	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ (Signature of Contracting Officer)	16C. DATE SIGNED 17-Aug-2001

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

Included in this amendment are changes to the specifications and the plans.

The price schedule is included.

Offerors are to complete and submit the attached SF 1442.

The project completion period is not to exceed 1278 calendar days.

By submitting a proposal, the offeror shall extend its acceptance of proposal period to 180 calendars days from the proposal due date.

The 100-page limit is respect to the contractor' s technical proposal only. The page limit does not apply to information supplied with respect to past performance and past experience, examples of prior work, or the subcontracting effort.

This amendment shall be attached to the specifications and shall be a part thereof. The offeror is required to acknowledge receipt of this amendment either by completing the space provided on the Offer and Award or Contract form when that form is submitted with the proposal, or by separate letter, or by telegram prior to the opening of the proposal. Failure to acknowledge all amendments may cause rejection of the proposal.

NOTICE TO OFFEROR
Failure of the Offeror to
Acknowledge receipt
Of this Amendment in
Item 19 of Standard
Form 1442 (Pg. 00010-2)
May result in REJECTION
Of the offer.

RFP NO. DACA51-01-R-0028

Amendment No. 4

Department of the Army, NYD
Corps of Engineers
New York, NY 10278-0090

AMENDMENT NO. 4 TO SPECIFICATIONS FOR ARVIN CADET PHYSICAL DEVELOPMENT CENTER, PHASE 2/3, USMA, WEST POINT, NEW YORK

TO OFFEROR:

A. The following are changes to the specifications:

1. DELETE Section 01025 MEASUREMENT AND PAYMENT as included in the Documents.
   ADD revised section 01025 MEASUREMENT AND PAYMENT as attached.

2. DELETE Section 01030 OPTIONS as included in the Documents.
   ADD revised section 01030 OPTIONS as attached.

3. DELETE Section 01810 COMMISSIONING OF SYSTEMS as included in the Documents.
   ADD revised section 01810 COMMISSIONING OF SYSTEMS as attached.

4. SECTION 02466 DRILLED FOUNDATION CAISSONS, Paragraph 3.1,
   DELETE subparagraph h.

5. SECTION 05090 WELDING, STRUCTURAL, Paragraph 1.3
   REVISE "conform to" in first line to read "conform either: to".

6. Section 10500 LOCKERS:
ADD paragraph 3.2 as follows:

"3.2 LOCKER SCHEDULE

"Provide lockers in layout/arrangements indicated. Locker count for each space shall be as follows:

"Room Number	Total Lockers
Y140	8
Y143	8
Y163	16
Z004	12
Z204	117
Z205	44".

7. Section 11480 ATHLETIC EQUIPMENT, Paragraph 1.3:
ADD item 11 as follows:

"11. Punching Bag Lift System."

8. Section 11480 ATHLETIC EQUIPMENT:
ADD paragraph 2.12 as follows:

"2.12 PUNCHING BAG LIFT SYSTEM

"2.12.1 General

"Provide punching bag lift system for each punching bag as required. Punching bag lift system shall include lift winches, wire rope, controls, vertical blocks, horizontal blocks and related accessories to provide a complete system to permit electrical lifting and lowering of punching bags. Punching bag lift system components shall be obtained from a single manufacturer.

"2.12.2 Lift Winches

"Provide lift winches for each punching bag as required Lift winches shall be Model TW600 as manufactured by Jeamar Winches, Inc. or approved equal. Winch shall be theater type, fully reversible and shall include three phase , 208 volt, 60 hertz, 1 horsepower TEFC flange mounted motor, high ratio worm gear direct drive, helical worm gear reducers, ball or roller bearings (no bushings shall be accepted), grooved drum with pressure roller, four contact rotary limit switches and two electro-magnetic brakes. Lift winch shall be suitable for continuous duty with a minimum service factor shall of 1. Working limit shall be 600 pounds with a line speed of 35 feet per minute. Motor, drive, drum, electromagnetic brakes and related components shall be

mounted on a single, fully welded base frame suitable for bolting to support system indicated.

"Provide at each winch engraved plastic label identifying related punching bag room and number. Label shall match labels at controls as required below.

"2.12.3 Winch Controls

"Provide for each winch a remote mounted, 'dead-man type' two button, (UP and DOWN) controls. Controls shall include starter, overload with reset, push button station transformer, control circuits with safety fuse and other related components to provide proper operation of the winch. Provide NEMA 4 type housing for control components.

"Controls for each winch for punching bags in the same room shall be housed together in a single cabinet, 24 inches wide nominal by 32 inches high nominal, fully recessed into partition at location approved by contracting officer within rooms containing punching bags. Cabinet shall be primed painted steel, suitable for field finish painting, with locking cover, keyed to building keying systems in accordance with the requirements of Section 08700 BUILDERS' HARDWARE.

"Provide engraved plastic label, 1 inch high by 2 inches long minimum, permanently affixed at each control to identify control for each punching bag by number (BAG 1, BAG 2, etc.). Color of label shall be black. Letters shall be white and 1/2 inch high minimum.

"2.12.4 Horizontal and Vertical Blocks

"Provide horizontal blocks and vertical blocks as required. Horizontal blocks shall be Model HB3500 and vertical blocks shall be Model VB 3500 as manufactured by Jeamar Winches Inc. or approved equal. Blocks shall be steel. Cast iron shall not be accepted. Sheaves shall be steel with hardened rope grooves. Double ball bearings shall be sealed, permanently lubricated type. Sheave-to-rope ratio shall be 15:1 minimum. Working load limit shall be 3,500 pounds. Block base shall be suitable for bolting to support system indicated.

"2.12.5 Wire Rope

"Provide wire rope as required. Wire rope shall be type 304 stainless steel, 1/4 inch, 7x19 strand core, conforming to MIL-DTL-83420. Provide termination of wire rope at winch suitable for winch. Provide loop with type 304 stainless steel heavy pattern thimble at punching bag."

9. Section 11480 ATHLETIC EQUIPMENT:
ADD paragraph 3.2.9 as follows:

"3.2.9 Punching Bag Lift System

"Punching Bag lift system shall be installed where required. Coordinate winch locations and block locations to provide clear operation and travel of wire rope. Secure wire rope to winch drum as recommended by winch manufacturer. Wire rope shall extend from each winch to designated punching bag with not less that 4 full wraps of wire rope on winch drum when punching bags are fully lowered. Adjust winch limit switches to stop winch when punching bags are in raised and lowered positions. Confirm required raised and lowered positions with contracting officer.

"Provide engraved plastic labels permanently attached to ceiling suspension system at each bag opening. Label shall match winch label and shall identify punching bag number (BAG 1, BAG 2, etc.). Confirm text with contracting officer for all labels before engraving."

10. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 1.1, References:
ADD the following references:

"AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

"ANSI S3.41	(1990; R 1996) Audible Emergency Evacuation Signals

"CODE OF FEDERAL REGULATIONS (CFR)

"47 CFR 15	Radio Frequency Devices

"FACTORY MUTUAL ENGINEERING AND RESEARCH (FM)

"FM P7825A	(1998) Approval Guide Fire Protection
"UL 632/ANSI C33.41	(1994; Rev Sep 1994) Electrically-Actuated Transmitters
"UL 864	(1996) Control Units for Fire-Protective Signaling Systems"

11. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE,, Paragraph 1.3:
REVISE paragraph 1.3 to read as follows:

"1.3 SYSTEM DESIGN

"1.3.1 Operation

"The fire alarm and detection system shall be a complete, supervised fire alarm system. The system shall be activated into the alarm mode by actuation of any alarm initiating device. The system shall remain in the alarm mode until the initiating device is reset and the fire alarm control panel is reset and restored to normal. Alarm initiating devices shall be connected to initiating device circuits (IDC), Style D, to signal line circuits (SLC), Style 6, in accordance with NFPA 72. Alarm notification appliances shall be connected to notification appliance circuits (NAC), Style Z in accordance with NFPA 72. A looped conduit system shall be provided so that if the conduit and all conductors within are severed at any point, all IDC, NAC and SLC will remain functional. The FACP (fire alarm control panel) shall have an internal integrated FM radio transceiver with a 4 watt minimum output. The FACP shall be in constant radio communication with Monaco D-700 system at the fire station. The FACP shall be able to report alarms with specific detailed locations to the D-700 on 60 different ZID (zone identification) cards. The FACP shall automatically report individual zone alarms, troubles, restorations and all panel status changes to the D-700. All trouble alarms shall be resounded to the D-700 at daily intervals. Alarm transmissions shall have transmitting priority over all other status changes. The system shall have a capacity of 792 analog addressable smoke or heat sensors, and 792 addressable monitor or control modules. All communication between the FACP and the central station shall use a FM radio Frequency of 407.525 MHz. Textual, audible, and visual appliances and systems shall comply with NFPA 72. Fire alarms system components requiring power, except for the control panel power supply, shall operate on 24 Volts dc. Addressable system shall be microcomputer (microprocessor micro controller) based with a minimum word size of eight bits and shall provide the following features:

"a. Sufficient memory to perform as specified and as shown for addressable system.

"b. Individual identity of each addressable device for the following conditions: alarm; trouble; open; short; and appliances missing/failed remote detector – sensitivity adjustment from the panel for smoke detectors.

"c. Capability of each addressable device being individually disabled or enabled from the panel even when device is in alarm or trouble.

"d. Each SLC shall be sized to provide 40 percent addressable expansion without hardware modifications to the panel.

"1.3.2 Operational Features

"The system shall have the following operating features:

"a. Monitor electrical supervision of IDC, SLC, and NAC. Smoke detectors shall have combined alarm initiating and power circuits.

"b. Monitor electrical supervision of the primary power (ac) supply, battery voltage, placement of alarm zone module (card, PC board) within the control panel, and transmitter tripping circuit integrity.

"c. A trouble buzzer and trouble LED/LCD (light emitting diode/liquid crystal diode) to activate upon a single break, open, or ground fault condition which prevents the required normal operation of the system. The trouble signal shall also operate upon loss of primary power (ac) supply, low battery voltage, removal of alarm zone module (card, PC board), and disconnection of the circuit used for transmitting alarm signals off-premises. A trouble alarm silence switch shall be provided which will silence the trouble buzzer, but will not extinguish the trouble indicator LED/LCD. Subsequent trouble and supervisory alarms shall sound the trouble signal until silenced. After the system returns to normal operating conditions, the trouble buzzer shall again sound until the silencing switch returns to normal position, unless automatic trouble reset is provided.

"d. A one person test mode. Activating an initiating device in this mode will activate an alarm for a short period if time, then automatically reset the alarm, without activating the transmitter during the entire process.

"e. A transmitter disconnect switch to allow testing and maintenance of the system without activating the transmitter but providing a trouble signal when disconnected and a restoration signal when reconnected.

"f. Evacuation alarm silencing switch which, when activated, will silence alarm devices, but will not affect the zone indicating LED/LCD nor the operation

of the transmitter. This switch shall be over-ridden upon activation of a subsequent alarm from an unalarmed device and the NAC devices will be activated.

"g. Electrical supervision for circuits used for supervisory signal services (i.e., sprinkler systems, valves, etc.). Supervision shall detect any open, short, or ground.

"h. Confirmation or verification of all smoke detectors. The control panel shall interrupt the transmission of an alarm signal to the system control panel for a factory preset period. This interruption period shall be adjustable from 1 to 60 seconds and be factory set at 20 seconds. Immediately following the interruption period, a confirmation period shall be in effect during which time an alarm signal, if present, will be sent immediately to the control panel. Fire alarm devices other than smoke detectors shall be programmed without confirmation or verification.

"i. The fire alarm control panel shall provide supervised addressable relays for HVAC shutdown and for control of HVAC fans utilized for smoke control. An override at the HVAC panel shall not be provided.

"j. The fire alarm panel shall provide supervised input modules for the monitoring of operation of HVAC fans utilized for smoke control.

"k. The fire alarm control panel shall provide the required monitoring and supervised control outputs needed to accomplish elevator recall.

"l. The fire alarm control panel shall monitor the fire sprinkler system, and other fire protection extinguishing systems.

"m. The control panel and field panels shall be software reprogram able to enable expansion or modification of the system without replacement of hardware or firmware. Examples of required changes are: adding or deleting devices or zones; changing system responses to particular input signals; programming certain input signals to activate auxiliary devices.

"n. Zones for IDC and NAC shall be arranged as required for the devices indicated on the contract drawings.

"o. Each manual station, smoke or heat detector, sprinkler/standpipe alarm or supervisory actuating device, and sub-system alarm or supervisory initiating device shall constitute a separate zone

for reporting to the fire command station. For display at the fire command station (FCS) and at outlying annunciator(s), each reporting zone (i.e., device) shall be individually identified, except that multiple smoke detectors (or multiple heat detectors) located within a single space may be identified by a common display. It shall be possible to separately identify and display the address of the individual detector(s) in alarm within any such space by means of an appropriate command at the FCS keyboard or keypad.

"p. Reporting of all required alarms and supervisory signals to the Fire Command Station (FCS) from initiating devices of the non-addressable type, including (but not limited to) sprinkler and standpipe waterflow and supervisory devices, manual fire alarm stations, sub-system (e.g., pre-action sprinkler, etc.) alarm and supervisory contacts, and the like shall be accomplished in conjunction with addressable monitoring modules of the initiating device type (i.e., AMM/ID). AMM/ID's shall be of a type intended for connection of NFPA 72, Style 6 "branch" signaling line circuits (SLC) as described hereinbefore and shall be connected to the appropriate SLC on the floor on which they are located. Except where incorporated as part of manual fire alarm stations (or in the outlet boxes on which they are mounted), AMM/ID's shall be mounted adjacent to the associated initiating devices in outlying addressable monitor module boxes and shall be complete with engraved red nameplate. Each AMM/ID shall be interconnected to its associated initiating device by means of an initiating device circuit (IDC) as described hereinbefore. Provide an end-of-line resistor at each initiating device so as to permit supervision of the interconnecting circuitry. Terminals shall be incorporated in each addressable module box for the accommodation of all entering conductors.

"q. Control (automatic and/or manual) and status reporting (monitoring) of equipment via the fire protective alarm system as specified hereinafter shall be accomplished by means of addressable control modules (ACM's) and addressable monitoring modules of the status reporting type (AMM/S's) located within 3 ft.-0 in. of the controlled equipment in outlying addressable monitor boxes similar to those specified above for the AMM/ID's. Addressable modules (ACM's and AMM/S's) shall be provided in accordance with the following:

"1. ACM's and AMM/S's shall be of a type intended for connection to NFPA 72, Style 6 inch branch

signaling circuits (SLC's) as described hereinbefore, and shall be connected to the appropriate SLC serving the floor on which they are located.

"2. Each ACM shall provide (2) SPDT contacts suitable for use at voltages up to 250 VAC and capable of interrupting 10 amperes inductive, and shall derive its operating and supervisory current at 24VDC from the SLC. If necessary, these contact ratings shall be accommodated by means of auxiliary control relays mounted within or adjacent to the same addressable monitor boxes as the ACM's, and deriving their operating power from the associated ACM's, or directly from the associated ECC via separate supervised power supply conductors.

"3. Each AMM/S shall function so as to provide a readily identifiable status indication at the FCS in response to a 120 or 208 VAC signal from the associated controlled equipment. Incorporate an auxiliary status (monitoring) relay for each AMM/S to convert a 120 or 208 VAC AC signal to a "dry" contact if the AMM/S requires a "dry" contact for proper status signal initiation. Auxiliary status relays, if required, shall be mounted in the same outlying addressable module boxes as their associated AMM/S's.

"4. At locations (such as motor control centers) where multiple equipment controllers are installed, the addressable modules (and any associated auxiliary relays) may be grouped in common addressable module boxes.

"5. Module address shall be clearly labeled on exterior of device.

"r. System operation shall be such as to provide automatic and/or manual control of fans, and of dampers and other equipment in response to alarm initiation, as well as central status reporting. Include provisions at the FCS in outlying system equipment control cabinets, and in outlying addressable module boxes (or cabinets) - each located within 3 ft.-0 in. of the associated motor starter, smoke purge damper control device or other equipment control device, control circuitry extensions (i.e., final connections) from the addressable module boxes to the controlled equipment and connections, all as required to achieve this control.

"s. Outlying addressable module boxes, each complete as indicated, shall be provided for equipment requiring automatic or manual control by the FPA system on the basis of the following:-

"1. One box including two ACM's ("stop", start") and one AMM/S ("running") for each fan.

"2. One box including one ACM ("purge") and two AMM/S's ("open"/"closed") for each smoke purge damper system. Refer to HVAC floor plans and risers for quantity of smoke purge damper systems (i.e., for each fan system which includes direct outside exhaust provisions).

"3. One addressable module box, including two ACM's ("recall", "recall to alternate floor") and one AMM/S ("elevators recalled") for each bank of elevators. "Alternate elevator recall" shall be initiated only by detector operation on the terminal flow. Provide two additional ACM's ("de-energize/re-energize elevator power) for each elevator. Also, include one AMM/S per elevator ("power de-energized").

"4. One addressable module box, including one ACM, for the fire/smoke door release system.

"5. Additional addressable module boxes as necessary to comply with the scheduled control of equipment in response to system alarm actuating devices.

"t. Provide final connections (i.e., control circuit extensions) from each addressable module boxes to the equipment "controller" it services, utilizing THWN wires run in conduit in accordance with the following:-

"1. From each box supplying a fan motor, provide 5 #14 THWN control circuit run in conduit to the motor starter and connect as indicated on the drawings.

"2. From each box supplying a smoke purge damper system, provide a 5 #14 circuitry run in conduit to damper control device (EP switch or electric damper motor), and damper end switches. Provide for each a 120 volt supply from an emergency panel. Connect as indicated on the drawings. For systems with additional upstream or downstream operable dampers through which smoke is exhausted, extend wiring to the associated damper control devices, and end switches, and connect so that all dampers operate as a group,

and all dampers must be fully open or closed to get status indications. Provide a 2 #14 in conduit circuitry run to an interface control device (relay or other) for each damper which also requires operation by the automatic temperature control system. Device will be provided within 10 feet of the damper as part of the automatic temperature control work. Connect as directed.

"3. From each box supplying elevators, provide a 6 #14 run in conduit to the elevator controller, and connect so that elevators are recalled to the terminal floor - or alternate floor - in response to operation of waterflow switch, elevator lobby detector, or elevator room smoke or heat detector, and an "elevators recalled" status signal is activated at the FPA system central equipment. Provide an additional 6#14 (in conduit) run from the box to an upstream device, arranged so as to provide a time delayed (adjustable 0 - 180 seconds) shutdown of the power to the elevator power feeder, to permit a remote manual restoration of power from the FCS, and a "status" indication at the FCS.

"u. System operation shall include manual over-ride control from -- and status reporting at -- the fire command station for each item of "controlled equipment" (such as fans, dampers, fire doors, elevators, etc.) which is to be automatically controlled in response to the operation of system alarm actuation devices as scheduled elsewhere, and for each smoke exhaust (purge) damper system and smoke purge fan. Re-start of fans shut down by an alarm shall be possible without clearing the alarm condition, (so as to assist in the smoke control) but only if a Fire Department key has been inserted in the Fire Command Station. Manual control of elevators will not be required, however, status reporting will be required. Additional "manual only" control of certain fans and dampers (plus status reporting) shall be provided if specified herein or scheduled on the drawings. To accomplish the aforementioned status reporting and manual control, include all required switching and status reporting devices at the Fire Command Station, and other necessary equipment at outlying equipment control cabinets and addressable module boxes, and all associated wiring, interwiring and final connections.

"v. The project contains a smoke exhaust (purge) system, requiring automatic purge initiation. Manual "purge" control will be required and shall be such as to require resetting at the fire command station for

each attempt to "purge". Any re-attempts to "purge" subsequent to failure of dampers to operate shall require manual resetting, as shall the restoration of the fire alarm system to "normal" after an "alarm" condition. To accomplish smoke purge, include:

"1. Equipment and wiring at the fire command station to automatically or manually start the smoke exhaust system motors to indicate system status as well. Where multiple fans are required for purge of a single floor or zone they shall be controlled as group.

"2. Addressable modules at outlying system equipment central cabinets and addressable module boxes and interconnecting circuitry and control circuit extensions, as required to accomplish the aforementioned operation of motors and dampers in conjunction with smoke purge, as described hereinbefore.

"w. Control of smoke exhaust system dampers has been specified hereinbefore. For the purpose of quantifying the systems, it shall be understood that a separate system is required for each fan system including recirculating air systems, which includes provisions for exhaust directly to the outside.

"x. Pressurization of selected areas is required as part of an overall "smoke control plan," the aforementioned sequence of operations, relay requirements and wiring requirements shall be modified as follows:

"1. Equipment and wiring at the fire command station to automatically or manually start the smoke make-up air system motors to indicate system status as well. Where multiple fans are required for purge of a zone they shall be controlled as a group. Where the smoke make-up airshafts are normally used for other purposes, the starting of the smoke make-up air fan system motors shall be preceded by the automatic shutdown of all other fans served by the shaft. Include equipment and wiring at the fire command station to accomplish this.

"y. At the fire command station, include devices to provide status reporting of the emergency generator ("running," "off") and each automatic transfer switch "normal," "emergency") plus manual control thereof. In addition, include an (8) wire control circuit extension from the fire command station to the emergency generator and each transfer switch and

connect as required for status reporting and manual control. Include auxiliary relays if required.

“z. At the fire command station, include devices to provide time delayed (adjustable 0 to 180 seconds) automatic "de-energize control" of each elevator power feeder in response to EMR or elevator shaft heat detector operation, plus status indication and manual re-energize control therefrom.

“aa. Provide all system equipment and circuitry as required to provide supervisory indications at the fire command station in response to operation of fire suppression equipment contacts as follows:

“1. The fire pump.
(a) "Pump running".
(b) "Failure of power".
(c) "Phase reversal".

“2. Refer to sprinkler and/or plumbing drawings for location of fire pump.

“1.3.3 Alarm Functions

“An alarm condition on a circuit shall automatically initiate the following functions:

“a. Transmission of a signal over the station radio fire reporting system. The alarms or troubles shall be reported on up to 60 individual zones.

“b. Audible and visual indications of the alarmed devices and troubles on the fire alarm control panel display and audible/visual display on the remote fire alarm annunciator (FAA).

“c. Operation of alarm notification appliances throughout the building as required by ANSI S3.41. Alarm notification appliances shall include speakers and visual devices.

“d. Closure of doors held open by electromagnetic devices.

“e. Operation of the smoke control system.

“f. Shutdown of power to the data processing equipment in the alarmed area.

“1.3.4 Primary Power

“Operating power shall be reconnected to the existing Power Supply for the old fire alarm panel. Transfer from normal to emergency power or restoration from emergency to

normal power shall be fully automatic and not cause transmission of a false alarm. Loss of ac power shall not prevent transmission of a signal via the fire reporting system upon operation of any initiating circuit. Primary and backup power shall also be provided in accordance with Paragraph 2.1.2 of Spec. Section 13852. Loss of AC power in FACP shall be reported to the central station.

"1.3.5 Battery Backup Power

"Battery backup power shall be through use of rechargeable, sealed-type storage batteries and battery charger.

"1.3.6 Interface With Other Equipment

"Interfacing components shall be furnished as required to connect to subsystems or devices which interact with the fire alarm system, such as supervisory or alarm contacts in suppression systems, operating interfaces for smoke control systems, door releases, etc."

12. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 1.5:
ADD before first sentence "All licenses and all proprietary information that allows West Point personnel to program, and maintain the system shall be provided at the time of Shop Drawing submittal."

13. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 1.5, SD-01 Data, Technical Data and Computer Software:
ADD before first sentence "Computer software shall be approved prior to system installation."

14. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 1.5, SD-13 Certificates, Licenses and Proprietary Information; GA:
REVISE in last line "pregram" to read "program".

15. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 1.5, SD-19 Operation and Maintenance Manuals:
REVISE last sentence reading "Manuals shall be approved prior to training" to read "Manuals shall be approved prior to system installation."

16. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 2.1:
ADD at end of paragraph "The battery storage will have capacity for not less than two additional batteries for the expansion of the fire alarms system for devices installed in Building A and E at a future date by others.

17. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 2.2:
DELETE the first sentence of this paragraph.

18. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 2.4:
ADD at the end of the first paragraph “The address of each device shall be clearly labeled on exterior of the device.”

19. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 2.4:
REVISE second sentence reading “The detectors shall be provided as indicated” to read “The detectors shall be provided as indicated or specified”.

20. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 2.4.1, Heat Detectors:
ADD paragraph 2.4.1.2 as follows:

“2.4.1.2 Fixed Temperature Detectors

“Detectors shall be designed for surface outlet box mounting and supported independently of wiring connections. Detectors shall be designed to detect high heat. The detectors shall have a specific temperature setting of 57.2 degrees C, 135 degrees F. The UL 521 test rating for the fixed temperature detectors shall be rated for 15 feet by 15 feet.”

21. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 2.6.5,
REVISE paragraph 2.6.5 to read as follows:

“2.6.5 Notification System (Public Address and Visual Notification)

“A. The notification system shall be a complete, supervised notification system incorporating both audible (voice evacuation) and visual notification. The notification system shall be a sub-system of the fire alarm system and shall be fully compatible with the fire alarm system. The system shall conform to the applicable requirements for the fire alarm system as specified in this section.

“B. The system shall provide for intercom and fire evacuation public address features as follows:-

“1. The system shall be of a dual channel type, capable of automatically broadcasting evacuation tones followed by recorded announcements repetitively. No tone signals shall be broadcast in stairwells.

"2. Manual "on-off" control from the fire command station of evacuation tone signals, recorded announcements and flashing of strobes through loudspeaker stations on any or all floors.

"3. Initiation of voice announcements from the fire command station through loudspeaker stations on any or all floors, and separately through loudspeaker stations in stairwells.

"C. The fire evacuation public address equipment in the system shall include the following features and functions:

"1. Amplifiers shall be sized to accommodate a quantity of speakers equal to that shown on the drawings, plus an additional bulk quantity of 50 speakers intended for installation at locations as directed throughout the system. Sizing shall be based on an average requirement of 2.0 watts per speaker.

"2. Amplifiers shall have a frequency response range of not more than "1.5 dB from 30 to 10,000 hertz and at rated output, less than 2% distortion over the frequency range of 60 to 15,000 hertz.

"3. Failure of a power amplifier shall shut down the amplifier and indicate a trouble condition as described in Reference Standard RS17-3A. Amplifiers shall be arranged in such manner, either by pairing or automatic switchover, to provide redundancy.

"4. Tone oscillators, microphone circuits and ancillary equipment shall be paired in a similar fashion to the amplifiers and be provided with either automatic or manual switchover to the redundant system.

"5. Where the audio path consists of twisted pair "riser cables," it shall include double the number of required pairs (as determined by the total number of speakers called for). Connections at the amplifiers shall be arranged to readily allow their "transfer" to future amplifiers as necessary.

"D. In lieu of the central amplification system described above, distributed amplification may be provided, however, such equipment shall conform to the redundancy requirements described hereinbefore, and the outlying equipment must derive its power from the central equipment.

"E. The visual notification system shall provide for visual notification features as follows:

"1. Strobes shall be synchronized at a rate of 1 to 1.1 flashes per seconds, and shall be of the self-synchronizing type or shall be suitable for use with synchronizing control units integral with the power supplies, or interpolated in the circuitry between power supplies and strobes (visual warning devices). Where not of the self-synchronized type, provide a sufficient quantity of synchronizing control units to fully utilize the installed power supply capacity for the project.

"2. Strobes shall continue to flash until the system is reset.

"F. Circuitry for the Notification system shall be as specified for the fire alarm system."

22. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Part 2, Products:
ADD paragraph 2.8 as follows:

"2.8 CONTROL PANEL

"Control Panel shall comply with the applicable requirements of UL 864. Panel shall be modular, installed in a surface mounted steel cabinet with hinged door and cylinder lock. Control panel shall be a clean, uncluttered, and orderly assembled panel containing components and equipment required to provide the specified operating and supervisory functions of the system. The panel shall have prominent rigid plastic, phenolic or metal identification plates for LED/LCDs, zones, SLC, controls, meters, fuses, and switches. Nameplates for fuses shall also include ampere rating. The LED/LCD displays shall be located on the exterior of the cabinet door or be visible through the cabinet door. Control panel switches shall be within the locked cabinet. A suitable means (single operation) shall be provided for testing the control panel visual indicating devices (meters or LEDs/LCDs). Meters and LEDs shall be plainly visible when the cabinet door is closed. Signals and LEDs/LCSs shall be provided to indicate by zone any alarm, supervisory or trouble condition on the system. Each IDC shall be powered and supervised so that a signal on one zone does not prevent the receipt of signals from other devices. Loss of power, including batteries, shall not require the manual reloading of a program. Upon restoration of power, startup shall be automatic, and shall not require any manual operation. The loss of primary power or the sequence of applying primary or emergency power shall not affect the transmission of

alarm, supervisory or trouble signals. Visual annunciation shall be provided for LED/LCD visual display as an integral part of the control panel and shall identify with a word description and id number each device. Cabinets shall be provided with ample gutter space to allow proper clearance between the cabinet and live parts of the panel equipment. If more than one modular unit is required to form a control panel, the units shall be installed in a single cabinet large enough to accommodate units. Cabinets shall be painted red.

"2.8.1 Remote System Audible/Visual Display

"Audible appliance shall have a minimum sound level output rating of 85 dBA at 10 feet and operate in conjunction with the panel integral display. The audible device shall be silenced by a system silence switch on the remote system. The audible device shall be silenced by the system silence switch located at the remote location, but shall not extinguish the visual indication. The remote LED/LCD visual display shall provide identification, consisting of the word description and id number for each device as displayed on the control panel. A rigid plastic, phenolic or metal identification sign which reads "Fire Alarm System Remote Display" shall be provided at the remote audible/visual display. The remote visual appliance located with the audible appliance shall not be extinguished until the trouble or alarm has been cleared.

"2.8.2 Circuit Connections

"Circuit conductors entering or leaving the panel shall be connected to screw-type terminals with each conductor and terminal marked for identification.

"2.8.3 System Expansion and Modification Capabilities

"Any equipment and software needed by qualified technicians to implement future changes to the fire alarm system shall be provided as part of this contract.

"2.8.4 Addressable Control Module

"The control module shall be capable of operating as a relay (dry contact form C) for interfacing the control panel with other systems, and to control door holders or initiate elevator fire service. The module shall be UL listed as compatible with the control panel. The indicating device or the external load being controlled shall be configured as a Style Y notification appliance circuits. The system shall be capable of supervising, audible, visual and dry contact circuits. The control module shall have both an input and output address. The supervision shall detect a short on the supervised circuit and shall prevent power from being applied to the circuit.

The control model shall provide address setting means compatible with the control panel's SLC supervision and store an internal identifying code. The control module shall contain an integral LED that flashes each time the control module is polled. The address shall be clearly labeled on exterior of device.

"2.8.5 Addressable Initiating Device Circuits Module

"The initiating device being monitored shall be configured as a Style D initiating device circuits. The system shall be capable of defining any module as an alarm module and report alarm trouble, loss of polling, or as a supervisory module, and reporting supervisory short, supervisory open or loss of polling. The module shall be UL listed as compatible with the control panel. The monitor module shall provide address setting means compatible with the control panel's SLC supervision and store an internal identifying code. Monitor module shall contain an integral LED that flashes each time the monitor module is polled. Pull stations with a monitor module are not required to have an LED. The address shall be clearly labeled on exterior of device."

23. Section 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE, Paragraph 3.2:
ADD paragraphs 3.2.2 and 3.2.3 as follows:

"3.2.2 Low Voltage DC Circuits Surge Protection

"All IDC, NAC, and communication cables/conductors, except fiber optics, shall have surge protection installed at each point where it exits or enters a building. Equipment shall be protected from surges per IEEE C62.41 B3 combination waveform and NFPA 70. The surge protector shall be rated to protect the 24 volt dc equipment. The maximum dc clamping voltages shall be 36 v (line-to-ground) and 72 Volt dc (line-to-line).

"3.2.3 Signal Line Circuit Surge Protection

"All SLC cables/conductors, except fiber optics, shall have surge protection/isolation circuits installed at each point where it exits or enters a building. The circuit shall be protected from surges per IEEE C62.41 B3 combination waveform and NFPA 70. The surge protector/isolator shall be rated to protect the equipment."

24. Section 13852 FIRE ALARM REPORTING SYSTEM, RADIO TYPE, Paragraph 1.2.4, Keys and Locks:
REVISE "C-145A" to read "C-415A".

25. Section 13852 FIRE ALARM REPORTING SYSTEM, RADIO TYPE, Paragraph 2.1:

REVISE the last sentence reading “Transmitters shall be manufactured by Monaco Enterprises, provided with a minimum of 60 zones” to read “Transmitters shall be model M2 as manufactured by Monaco Enterprises, provided with a minimum of 60 zones.”

26. Section 14210 ELEVATORS, ELECTRIC, paragraph 2.13: REVISE paragraph title reading “AUTOMATIC ELEVATOR OPERATION (FREIGHT ELEVATOR)” to read “AUTOMATIC ELEVATOR OPERATION (PASSENGER AND FREIGHT ELEVATOR)”.

27. ADD Section 14440 SCISSOR LIFTS as attached.

28. Section 15995 COMMISSIONING OF HVAC SYSTEMS, Pre-Commissioning Checklist – Computer Unit (page 20 and 21): REVISE “CRU-1, 2” to read “AC-1, 2” in second line at each page.

29. Section 15995 COMMISSIONING OF HVAC SYSTEMS, Functional performance test Checklist – Computer Unit (page 48): REVISE “CRU-1, 2” to read “AC-1, 2” in second line.

30. Section 00800 SPECIAL CONTRACT CLAUSES, Delete current page 00800-4 in its entirety and insert new page 00800-4 as attached.

B. CHANGES TO THE DRAWINGS

1. REVISE drawings G0.1, G0.2, G0.3, and G0.4 DRAWING LIST, file numbers 7687-12301, 7687-12302, 7687-12303, and 7687-12304 respectively, at each instance to reflect drawing title changes as noted herein.

2. Drawing G0.3 DRAWING LIST 3 OF 4, file number 7687-12303, Volume 6 at each instance:
REVISE Drawing file number 7687-12851, from "--- Not Used" to "A9.30 OPTION OP104 PUNCHING BAG LIFTS".

3. REVISE drawing C3-1 LAYOUT AND MATERIALS ENLARGEMENT PLAN, file 7687-12403, as attached.

4. REVISE drawing C4-1 GRADING, DRAINAGE AND UTILITIES PLAN, file 7687-12404, as attached.

5. Drawing S0.1, GENERAL NOTES, A – GENERAL:
ADD note A10 as follows:

"A10 ALL REINFORCED MASONRY REQUIRES DOWELS FROM SUPPORTING ELEMENTS TO LAP WITH VERTICAL MASONRY REINFORCEMENT. SEE ARCHITECTURAL DRAWINGS FOR DETAILS."

6. Drawing S0.1, GENERAL NOTES, B – FOUNDATIONS:
ADD note B14 as follows:

"B14 SEE D SERIES DRWAINGS FOR EXISTING CASISSONS TO BE REMOVED."

7. Drawing S0.1, GENERAL NOTES, E - STRUCTURAL STEEL:
ADD Note E20 as follows:

"E20 LATERAL-LOAD-RESISTING SYSTEM: LATERAL LOADS, WIND AND SEISMIC, ARE DELIVERED TO METAL DECK AND COMPOSITE CONCRETE/METAL DECK DIAPHRAGMS AT THE ROOF AND FLOOR LEVELS. THE DIAPHRAGMS ARE SUPPORTED LATERALLY BY BRACED FRAMES. LOADS PASS FROM THE DIAPHRAGMS TO THE BRACED FRAMES BY CONNECTING DIRECTLY TO BRACED FRAME BEAMS OR THROUGH COLLECTOR BEAMS IN THE PLANE OF THE FRAMES. FRAME REACTIONS ARE DELIVERED TO THE FOUNDATION THROUGH ANCHOR BOLTS AND BEARING ON CONCRETE ELEMENTS. LATERAL TIES ARE ALSO MADE TO SLABS ON GRADE AND SUBSEQUENTLY TO ADJACENT FOUNDATION WALLS. NET UPLIFT REACTIONS ARE PROVIDED FOR THROUGH ANCHOR BOLTS AND ROCK ANCHORS FOR FOUNDATION HOLD DOWN."

8. REVISE Drawing S0.2 TYPICAL DETAILS SHEET 1, file number 7687-12420 as attached.

9. Drawing S0.4 TYPICAL DETAILS – SHEET 3, Detail 3:
REVISE Notes 4 and 5 to read as follows:

"4. PANEL SIDE....3/4" DIA PUDDLE WELDS AT 12" OC.

"5. PANEL SIDE WITH FILLER PIECE, FILLER-TO-PANEL AND FILLER TO SUPPORTING STEEL....3/4" DIA PUDDLE WELDS AT 12" OC."

10. Drawing S0.5, TYPICAL DETAILS – SHEET 4, Detail 6, TYPICAL DETAIL – TS BM TO TS COL MOMENT CONNECTION:
REVISE notes 2 and 3 to read as follows:

"2. TS10X8 CMU SUPPORT TUBE NOT SHOWN FOR CLARITY. SEE DET 8 & 21 ON DRAWING S6.01.

"3. TS12X6 CORNER CMU SUPPORT TUBE NOT SHOWN FOR CLARITY. SEE DETAIL 10 & 20 ON DRAWING S6.01."

11. Drawing S1.0YS(t) EARLY CONSTRUCTION PART PLANS BUILDING Y SOUTH, SECOND FLOOR FRAMING PLAN:
ADD shading to indicate roof in area bounded by column lines E.1 to M and 1 to 2.7.

12. Drawing S1.0YS(t) EARLY CONSTRUCTION PART PLANS BUILDING Y SOUTH, SECOND FLOOR FRAMING PLAN:
ADD General Note GN7 as follows:

"GN7. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

13. Drawing S1.0YS BASEMENT AND FOUNDATION FRAMING PLAN BUILDING Y SOUTH:
ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

14. Drawing S1.1YS FIRST FLOOR FRAMING PLAN BUILDING Y SOUTH:
ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS

OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

15. Drawing S1.2YS SECOND FLOOR FRAMING PLAN BUILDING Y SOUTH: ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

16. Drawing S1.2YS SECOND FLOOR FRAMING PLAN BUILDING Y SOUTH: ADD note at intersection of column lines Q and 8, as follows:

"Combined footing F6/4 shall be centered on column lines Q and 8".

17. Drawing S1.3YS THIRD FLOOR FRAMING PLAN BUILDING Y SOUTH: ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

18. Drawing S1.3YS THIRD FLOOR FRAMING PLAN BUILDING Y SOUTH ADD shading to indicate roof in area bounded by column lines D to M.3 and 2.7 to 3.

19. Drawing S1.4YS FOURTH FLOOR FRAMING PLAN BUILDING Y SOUTH: ADD immediately south of column G.9/5.6 missing dimension from line G.9 east to edge of depression of 6 3/4".

20. Drawing S1.4YS FOURTH FLOOR FRAMING PLAN BUILDING Y SOUTH:
ADD General note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

21. Drawing S1.5YS FIFTH FLOOR FRAMING PLAN BUILDING Y SOUTH:
ADD General note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

22. Drawing S1.6YS SIXTH FLOOR FRAMING PLAN BUILDING Y SOUTH:
REVISE detail reference immediately north of column P.9/6.6 reading "SIM 6/6.01" to read "SIM 9/S6.01".

23. Drawing S1.6YS SIXTH FLOOR FRAMING PLAN BUILDING Y SOUTH:
REVISE detail reference east of column P.9/6.6 reading "SIM 6/6.01" to read "9/S6.01".

24. Drawing S1.6YS SIXTH FLOOR FRAMING PLAN BUILDING Y SOUTH:
ADD General note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

25. Drawing S1.7YS ROOF FRAMING PLAN BUILDING Y SOUTH:
ADD General note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

26. Drawing S1.0YN BASEMENT AND FOUNDATION FRAMING PLAN BUILDING Y NORTH:
ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

27. Drawing S1.1YN FIRST FLOOR FRAMING PLAN BUILDING Y NORTH: ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

28. Drawing S1.2YN SECOND FLOOR FRAMING PLAN BUILDING Y NORTH: ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

29. Drawing S1.3YN THIRD FLOOR FRAMING PLAN BUILDING Y NORTH: ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

30. Drawing S1.4YN FOURTH FLOOR FRAMING PLAN BUILDING Y NORTH: ADD General Note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

31. Drawing S1.5YN FIFTH FLOOR FRAMING PLAN BUILDING Y NORTH: ADD General Note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

32. Drawing S1.6YN SIXTH FLOOR FRAMING PLAN BUILDING Y NORTH: ADD General Note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

33. Drawing S1.7YN ROOF FRAMING PLAN BUILDING Y NORTH:
ADD General Note GN12 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

34. REVISE drawing S1.0ZE BASEMENT AND FOUNDATION FRAMING PLAN BUILDING Z EAST, file number 7687-12446 as attached.

35. Drawing S1.0ZE BASEMENT AND FOUNDATION FRAMING PLAN BUILDING Z EAST as revised above:
ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

36. Drawing S1.0ZE BASEMENT AND FOUNDATION FRAMING PLAN BUILDING Z EAST as revised above:
ADD note with arrow to pier P38 between column lines A.8 and B on column line 26.4 reading as follows:

"Cut existing 8" nominal foundation wall to clear new pier P38. Provide 12 #4 dowels x 24" long evenly spaced and drilled and epoxy grouted 12" into existing concrete. Extend P38 to meet existing foundation wall."

37. REVISE drawing S1.1ZE FIRST FLOOR FRAMING PLAN BUILDING Z EAST, file number 7687-12447, as attached.

38. Drawing S1.1ZE FIRST FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

39. Drawing S1.1ZE FIRST FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD W10x12 perimeter framing extending to surrounding beams for each of three (3) openings for duct work west of column line K between column lines 15.5 and 17. See Drawing M1.1ZE for duct/opening sizes required.

40. REVISE drawing S1.2ZE SECOND FLOOR FRAMING PLAN BUILDING Z EAST, file number 7687-12448, as attached.

41. Drawing S1.2ZE SECOND FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

42. Drawing S1.2ZE SECOND FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
REVISE two (2) detail/section references on column line 26.4 between column lines A.2 and A.5 reading xx/A6.xx" to read "10/S6.05"

43. Drawing S1.2ZE SECOND FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD between column lines 16.4 and 17 and between column lines A.8 and B opening for ductwork. See drawing M1.2ZE for duct/ opening size required.

44. Drawing S1.2ZE SECOND FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD between column lines 15 and 15.7 and between column lines A.5 and A.6 opening for ductwork with perimeter framing of W10X12 extending to surrounding beams. See drawing M1.2ZE for duct/ opening size required.

45. Drawing S1.3ZE THIRD FLOOR FRAMING PLAN BUILDING Z EAST:
ADD General Note GN12 AND GN13 as follows:

"GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."
"GN13. WITHIN EXISTING BUILDING A WALLS, VERY CLOSELY-SPACED DIAGONAL HATCHING INDICATES EXISTING OPENINGS OR EXISTING MASONRY INFILL. SEE D AND A SERIES DRAWINGS FOR WORK REQUIRED."

46. Drawing S1.3ZE THIRD FLOOR FRAMING PLAN BUILDING Z EAST:
REVISE note east of column line A.5 between column lines 18 and 20 reading "NEW INFILL COMPOSITE SLAB ON 8 NEW BMS" TO READ "SHADED AREA TO RECEIVE NEW INFILL COMPOSITE SLAB ON 8 NEW BMS".

47. Drawing S1.3ZE THIRD FLOOR FRAMING PLAN BUILDING Z EAST: ADD between column lines 16.4 and 17 and between column lines A.8 and B opening for ductwork. See drawing M1.2ZE for duct/ opening size required.

48. Drawing S1.3ZE THIRD FLOOR FRAMING PLAN BUILDING Z EAST: ADD between column lines 15 and 15.7 and between column lines A.5 and A.6 opening for ductwork with perimeter framing of W10X12 extending to surrounding beams. See drawing M1.2ZE for duct/ opening size required.

49. REVISE drawing S1.4ZE FOURTH FLOOR FRAMING PLAN BUILDING Z EAST, file number 7687-12450, as attached.

50. Drawing S1.4ZE FOURTH FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD General Note GN12 as follows:

    "GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

51. Drawing S1.4ZE FOURTH FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD between column lines 15 and 15.7 and west of column line B opening for ductwork with perimeter framing of W10X12 extending to surrounding beams. See drawing M1.4ZE for duct/ opening size required.

52. Drawing S1.4ZE FOURTH FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD between column lines 15 and 17 and east of column line D three (3) openings for floor duct register slots each with perimeter framing of W10X12 extending to surrounding beams. See drawing M1.4ZE for duct/ opening size required.

53. REVISE drawing S1.5ZE FIFTH FLOOR FRAMING PLAN BUILDING Z EAST, file number 7687-12451, as attached.

54. Drawing S1.5ZE FIFTH FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD General Note GN12 as follows:

    "GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS."

55. Drawing S1.5ZE FIFTH FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
REVISE notation between column lines G and F on column line GGe reading "SEE TYP RPPF EDGE DETAIL" to read "SEE TYP ROOF EDGE DETAIL".

56. Drawing S1.5ZE FIFTH FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
DELETE notation between column lines K and L.5 and between column lines 15 and 15.7 reading “250” with leader and arrow immediately east of W18x50 notation on column line 15.

57. Drawing S1.5ZE FIFTH FLOOR FRAMING PLAN BUILDING Z EAST as revised above:
ADD between column lines 21 and 22 and between column lines H and J opening for steam exhaust head discharge with perimeter framing of W10X12 extending to surrounding beams. See drawing M1.5ZE for duct/ opening size required.

58. Drawing S1.6ZE SIXTH FLOOR FRAMING PLAN BUILDING Z EAST:
ADD General Note GN12 as follows:

“GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS.”

59. Drawing S1.7ZE ROOF FRAMING PLAN BUILDING Z EAST:
ADD General Note GN12 as follows:

“GN12. FOR DIMENSIONS TO EDGES OF SLABS AND/OR STEEL DECK AT FLOORS AND ROOFS WHERE NOT DEFINED ON THE STRUCTURAL DRAWINGS, REFER TO A SERIES DRAWINGS.”

60. Drawing S3.03 BRACED FRAME ELEVATIONS BLDG ZE, BF-13:
REVISE notation on horizontal member between column lines 15 and 17 at 5th/roof level reading “TS20x8x.500” to read “W21”.

61. Drawing S4.01 FLOOR TRUSS ELEVATIONS:
REVISE note 12 to read as follows:

“TRUSS LATERAL STABILITY IN THE COMPLETED STRUCTURE IS DEPENDENT ON BOTH TOP AND BOTTOM CHORD BRACING PROVIDED BY THE BRIDGING AND BY THE METAL/CONCRETE DIAPHRAGM. TRUSS ERECTION SHALL BEGIN AT THE FIRST TRUSS FROM THE END OF THE BRIDGING LINE TIED INTO W12 FLOOR BEAMS. AS EACH TRUSS IS ERECTED, THE PERMANENT BRIDGING OR TEMPORARY BRACING SHALL BE INSTALLED BEFORE THE TRUSS IS RELEASED FROM ITS LIFTING SYSTEM.”

62. Drawing S4.02 STORY DEEP TRUSS ELEVATIONS,
ADD notation at column line 17 at elevation 249’-0” reading as follows:

“PROVIDE FIELD ADJUSTABLE DETAILS THREE (3) PLACES TO ALLOW RE-PLUMBING OF LINE 17 COLUMNS AT LINES D, F AND H DURING ERECTION AND AFTER CASTING OF THE 4TH FLOOR SLAB IN THE BOTTOM CHORDS OF THE T10 TRUSS, DETAILS TO BE WELDED AFTER ADJUSTMENTS.

63. Drawing S4.02 STORY DEEP TRUSS ELEVATIONS,
REVISE note 8 to read as follows:

"TRUSS LATERAL STABILITY IN THE COMPLETED STRUCTURE IS DEPENDENT ON BOTH TOP AND BOTTOM CHORDS BEING BRACED BY PERPENDICULAR FRAMING CONNECTED TO THE METAL DECK AND/OR COMPOSITE METAL/CONCRETE DECK DIAPHRAGM(S) THAT IS/ARE CONNECTED TO BRACED FRAMES. STORY DEEP TRUSSES SHALL HAVE TEMPORARY ERECTION BRACING UNTIL THE PERMANENT BRACING SYSTEM IS IN PLACE."

64. REVISE drawing S5.12 FOUNDATION SECTIONS AND DETAILS, file number 7687-12480, as attached.

65. Drawing S5.12 FOUNDATION SECTIONS AND DETAILS, Detail 10:
REVISE notation reading "For reinf'd CMU walls carrying top closure slab for 'tunnel space' betw. bldgs ZE & E see archt dwgs A1.0ZE & A4.XX" to read "For reinf'd CMU walls carrying top closure slab for 'tunnel space' betw. bldgs ZE & E see archt dwgs A1.0ZE & A3.50. Provide S1 top structural slab bearing on 8" reinforced CMU walls, dowel top slab to foundation wall on line 26 with #4 at 12" oc."

66. Drawing S6.04 SECTIONS AND DETAILS, Detail 1:
REVISE dimension right of column line A.8 reading "2 inches" to read "12 inches" and extend hooked top reinforcing bars to suit.

67. Drawing S6.04 SECTIONS AND DETAILS, Detail 8:
REVISE dimension right of column line A.8 reading "2 inches" to read "12 inches" and extend hooked top reinforcing bars to suit.

68. REVISE drawing S6.05 SECTIONS AND DETAILS, file number 7687-12486, as attached.

69. A1.00, MATERIAL LIST KEY, file 7687-12499 at each instance:
ADD Items 144a and 144b as follows:

"SECTION 14440 SCISSOR LIFTS
"144a Scissor Lift
"144b Power Unit".

70. Drawing A1.04 INT. COLUMN COVER DETAILS, Location Schedule – Detail 2a/A1.04:
DELETE reference for "A1.5YS – Y522 – M.3/5.6 – STANDARD"

71. REVISE drawing A1.0YS BASEMENT PLAN BUILDING SEGMENT Y SOUTH, file 7687-12507, as attached.

72. Drawing A1.1YS FIRST FLOOR PLAN BUILDING SEGMENT Y SOUTH:

REVISE detail reference at column G.9/5.6 from referencing detail 1/A1.05 to reference detail 2/A1.04. Back reference to A1.1YS does not change.

73. Drawing A1.1YS FIRST FLOOR PLAN BUILDING SEGMENT Y SOUTH: DELETE text reading “TYP @ COL” north and east of column G.9/5.6.

74. REVISE drawing A1.3YS THIRD FLOOR PLAN BUILDING SEGMENT Y SOUTH, file 7687-12510, as attached.

75. REVISE drawing A1.4YS FOURTH FLOOR PLAN BUILDING SEGMENT Y SOUTH, file 7687-12511, as attached.

76. REVISE drawing A1.5YS FIFTH FLOOR PLAN BUILDING SEGMENT Y SOUTH, file 7687-12512, as attached.

77. Drawing A1.0YN BASEMENT PLAN BUILDING SEGMENT Y NORTH: REVISE detail reference at intersection of column line E and 10 from referencing detail 2/A9.12 to reference detail 1/A0.4. Delete back reference to drawing A1.1YNh.

78. REVISE drawing A1.6YN SIXTH FLOOR PLAN BUILDING SEGMENT Y NORTH, file 7687-12521, as attached.

79. REVISE drawing A1.7YN ROOF PLAN BUILDING SEGMENT Y NORTH, file 7687-12522, as attached.

80. Drawing A1.0ZE BASEMENT PLAN BUILDING SEGMENT Z EAST & B-1:
REVISE detail reference at intersection of column line E and 22 from referencing detail 2/A9.12 to reference detail 1/A0.4. Delete back reference to drawing A1.1YNh.

81. REVISE drawing A1.1ZE FIRST FLOOR PLAN BUILDING SEGMENT Z EAST & B-1, file 7687-12524, as attached.

82. REVISE drawing A1.3ZE THIRD FLOOR PLAN BUILDING SEGMENT Z EAST & B-1, file 7687-12526, as attached.

83. REVISE drawing A1.4ZE FOURTH FLOOR PLAN BUILDING SEGMENT Z EAST & B-1, file 7687-12527, as attached.

84. REVISE drawing A1.5ZE FIFTH FLOOR PLAN BUILDING SEGMENT Z EAST & B-1, file 7687-12528, as attached.

85. REVISE drawing A1.6ZE SIXTH FLOOR PLAN BUILDING SEGMENT Z EAST & B-1, file 7687-12529, as attached.

86. Drawing A2.05 EXTERIOR ELEVATIONS BUILDING Y, Detail 3: REVISE detail reference between column line 3 and 4 from referencing 7e/A4.11 to referencing 7e/A4.15.

87. Drawing A2.05 EXTERIOR ELEVATIONS BUILDING Y, Detail 1:

REVISE empty detail reference at top of detail (above elevation 271.00' line) between column line 13 and 14 to referencing 6/A3.19.

88. Drawing A2.05 EXTERIOR ELEVATIONS BUILDING Y, Detail 1: DELETE empty detail reference between column line 13 and 14 and between elevation reference lines 251.00' and 266.50'.

89. REVISE drawing A2.06 EXTERIOR ELEVATION BUILDING Y, file 7687-12550, as attached.

90. REVISE drawing A2.09 EXTERIOR ELEVATION BUILDING Y, file 7687-12553, as attached.

91. REVISE drawing A2.10 EXTERIOR ELEVATION BUILDING Y, file 7687-12554, as attached.

92. REVISE drawing A2.11 EXTERIOR ELEVATION BUILDING Z, file 7687-12555, as attached.

93. REVISE drawing A2.31 EAST/WEST SECTION AT 6 LINE BUILDING Y, file 7687-12558, as attached.

94. REVISE drawing A2.32 EAST/WEST SECTION AT 10 LINE BUILDING Y, file 7687-12559, as attached.

95. REVISE drawing A2.33 EAST/WEST SECTION AT 14 LINE BUILDING Y, file 7687-12560, as attached.

96. REVISE drawing A2.34 EAST/WEST SECTION AT 14 LINE BUILDING Y, file 7687-12561, as attached.

97. REVISE drawing A2.35 NORTH/SOUTH SECTION AT F.5 LINE BUILDING Y, file 7687-12562, as attached.

98. REVISE drawing A2.37 NORTH/SOUTH SECTION AT C LINE BUILDING Y, file 7687-12564, as attached.

99. REVISE drawing A2.38 SECTIONS AT ATRIUM BUILDING Y, file 7687-12565, as attached.

100. REVISE drawing A2.39 EAST/WEST SECTION AT ATRIUM BUILDING Y, file 7687-12566, as attached.

101. REVISE drawing A2.41 EAST/WEST SECTION AT 21 LINE BUILDING Z, file 7687-12567, as attached.

102. REVISE drawing A2.42 NORTH/SOUTH SECTION AT G LINE BUILDING Z, file 7687-12568, as attached.

103. REVISE drawing A3.03 WALL SECTIONS AT 1 & 3 LINES BUILDING YS, file 7687-12579, as attached.

104. REVISE drawing A3.04 WALL SECTIONS AT 1 & 3 LINES BUILDING YS, file 7687-12580, as attached.

105. REVISE drawing A3.05 WALL SECTIONS AT D AND E.1 LINES BUILDING YS, file 7687-12581, as attached.

106. REVISE drawing A3.09 WALL SECTION AT 14.9 LINE BUILDING YN, file 7687-12585, as attached.

107. REVISE drawing A3.10 WALL SECTIONS AT ATRIUM AT S.2 LINE BUILDING YN, file 7687-12586, as attached.

108. REVISE drawing A3.11 WALL SECTIONS AT ATRIUM AT S.2 LINE BUILDING YN, file 7687-12587, as attached.

109. REVISE drawing A3.13 WALL SECTIONS AT ATRIUM AT 14 LINE BUILDING YN, file 7687-12589, as attached.

110. REVISE drawing A3.14 WALL SECTIONS AT 14.9 LINE BUILDING YN, file 7687-12590, as attached.

111. REVISE drawing A3.15 WALL SECTION AT C, D AND E.1 LINES BUILDING YN, file 7687-12591, as attached.

112. REVISE drawing A3.16 WALL SECTIONS AT C LINE BUILDING YN, file 7687-12592, as attached.

113. REVISE drawing A3.41 WALL SECTIONS AT 17 LINE BUILDING ZE, file 7687-12596, as attached.

114. REVISE drawing A3.42 WALL SECTIONS MISC. BUILDING ZE, file 7687-12597, as attached.

115. REVISE drawing A3.44 WALL SECTIONS AT A.6 AND C LINES BUILDING ZE, file 7687-12599, as attached.

116. REVISE drawing A3.45 WALL SECTION AT C LINE BUILDING ZE, file 7687-12600, as attached.

117. REVISE drawing A3.47 WALL SECTIONS AT A.6 AND C LINE BUILDING ZE, file 7687-12602, as attached.

118. REVISE drawing A3.49 WALL SECTIONS AT 14.3, 15 AND 15.7 LINES BUILDING ZE, file 7687-12604, as attached.

119. REVISE drawing A3.51 WALL SECTIONS AT 26 LINE BUILDING ZE, file 7687-12606, as attached.

120. REVISE drawing A3.52 WALL SECTIONS AT 26 LINE BUILDING ZE, file 7687-12607, as attached.

121. REVISE drawing A3.54 WALL SECTIONS AT 26 LINE BUILDING ZE AND B, file 7687-12609, as attached.

122. REVISE drawing A3.57 WALL SECTIONS AT M.7 LINE BUILDING ZE, file 7687-12612, as attached.

123. REVISE drawing A3.58 WALL SECTIONS AT M.7 AND M LINES BUILDING ZE, file 7687-12613, as attached.

124. REVISE drawing A3.62 WALL SECTIONS AT STAIR NO. 1 AT M.3 LINE, file 7687-12616, as attached.

125. REVISE drawing A3.64 WALL SECTIONS AT STAIR NO. 1 AT N.5 LINE, file 7687-12618, as attached.

126. REVISE drawing A3.65 WALL SECTIONS AT STAIR NO. 1 AT N.5 LINE, file 7687-12619, as attached.

127. REVISE drawing A3.66 WALL SECTIONS AT STAIR NO. 2 AT P.9 LINE, file 7687-12620, as attached.

128. REVISE drawing A3.67 WALL SECTIONS AT STAIR NO. 3 AT S.1 LINE, file 7687-12621, as attached.

129. REVISE drawing A3.68 WALL SECTIONS AT STAIR NO. 3 AT S.1 LINE, file 7687-12622, as attached.

130. REVISE drawing A3.70 WALL SECTIONS AT STAIR NO. 6 BETWEEN 1.5 &2.7 LINES, file 7687-12624, as attached.

131. REVISE drawing A3.72 WALL SECTIONS AT STAIR NO. 6 AT 1.5 LINE, file 7687-12626, as attached.

132. REVISE drawing A3.74 WALL SECTIONS AT STAIR NO. 6 BETWEEN 1.5 & 2.7 LINES, file 7687-12628, as attached.

133. REVISE drawing A3.90 WALL SECTIONS AT ATRIUM C LINE BUILDING YN, file 7687-12629, as attached.

134. REVISE drawing A4.03 ALUMINUM CURTAIN WALL SCHEDULE AND ELEVATION DETAILS, file 7687-12637, as attached.

135. REVISE drawing A4.32 WINDOW DETAILS AT GYM AND STAIRS, file 7687-12661, as attached.

136. REVISE drawing A4.58 ENTRY DETAILS BUILDING YS, file 7687-12675, as attached.

137. REVISE drawing A4.61 ENTRY DETAILS, file 7687-12678, as attached.

138. REVISE drawing A4.62 CANOPY AT LOADING DOCK, file 7687-12679, as attached.

139. Drawing A4.18 TYPICAL ROOF DETAILS, Roof Details General Notes:
ADD note 7 and 8 as follows:

"7. FOR COLD PIPE (<120 DEGREES F), CONDUIT, TUBING AND THE LIKE UP TO 2 INCH DIAMETER PROVIDE DETAIL 12/A4.18. FOR COLD PIPE (<120 DEGREES F), CONDUIT, TUBING AND THE LIKE OVER 2 INCH DIAMETER PROVIDE DETAIL 2/A4.18.

"8. PITCH POCKETS ARE NOT ACCEPTABLE AND SHALL NOT BE USED FOR ANY ROOF PENETRATION FLASHING/SEALING."

140. REVISE drawing A5.21YN INTERIOR ELEVATIONS BUILDING YN, file 7687-12733, as attached.

141. REVISE drawing A5.22YN INTERIOR ELEVATIONS BUILDING YN, file 7687-12734, as attached.

142. REVISE drawing A5.23YN INTERIOR ELEVATIONS BUILDING YN, file 7687-12735, as attached.

143. REVISE drawing A5.11ZE INTERIOR ELEVATIONS BUILDING ZE, file 7687-12749, as attached.

144. REVISE drawing A6.00 HANDRAIL AND GUARDRAIL TYPES, file 7687-12764, as attached.

145. REVISE drawing A6.01 PASSENGER ELEVATOR AND STAIR NO. 7 ENLARGED PLANS, file 7687-12765, as attached.

146. REVISE drawing A6.05 FREIGHT ELEVATOR AND STAIR NO. 9 ENLARGED PLANS, file 7687-12768, as attached.

147. REVISE drawing A6.17 STAIR NO. 5 SECTIONS (OPTION OP207), file 7687-12779, as attached.
Note: drawing title revised to read "STAIR NO. 5 AND OPTION OP207 SECTIONS".

148. REVISE drawing A6.18 STAIR NO. 6 ENLARGED PLANS AND SECTION, file 7687-12780, as attached.

149. Drawing A6.20 STAIR NO. 8 AND MISC STAIRS ENLARGED PLANS AND SECTIONS, file number 7687-12782, detail 8:
REVISE stair landing elevation right of column line Q reading "EL 254.00'" to read "EL 252.67'".

150. Drawing A6.20 STAIR NO. 8 AND MISC STAIRS ENLARGED PLANS AND SECTIONS, file number 7687-12782, details 2 (plan), 3 (section) and 4 (section):
DELETE materials list reference note "55c3" at each instance.

151. Drawing A6.21 ATRIUM RAIL (OPTION OP27) DETAILS, file number 7687-12783:
REVISE drawing title to read "ATRIUM RAIL AND OPTION OP207 DETAILS".

152. Drawing A6.22 ATRIUM RAIL (OPTION OP207) DETAILS, file number 7687-12784:

REVISE drawing title to read “ATRIUM RAIL AND OPTION OP207 DETAILS”.

153. Drawing A6.23 ATRIUM STAIR RAIL (OPTION OP207) DETAILS, file number 7687-12785:
REVISE drawing title to read “ATRIUM STAIR RAIL AND OPTION OP207 DETAILS”.

154. Drawing A6.24 ATRIUM STAIR RAIL (OPTION OP207) DETAILS, file number 7687-12786:
REVISE drawing title to read “ATRIUM STAIR RAIL AND OPTION OP207 DETAILS”.

155. REVISE drawing A6.25 STAIR DETAILS (OPTION OP207) STAIR NO. 8, file number 7687-12787, as attached.

156. Drawing A6.29, Notes: Dwg A6.29:
REVISE note 2 to read “See Option OP207 for work required of option OP207 for guardrails and handrails.”

157. ADD Drawing A9.30 OPTION OP104 PUNCHING BAG LIFTS, file 7687-12851, as attached.

158. REVISE drawing M4.2 EMCS DETAIL SHEET 1 – MECHANICAL DRAWING, file number 7687-12956, as attached.

159. REVISE drawing M4.3 EMCS DETAIL SHEET 2 – MECHANICAL DRAWING, file number 7687-12957, as attached.

160. REVISE drawing M4.4 EMCS DETAIL SHEET 3 – MECHANICAL DRAWING, file number 7687-12958, as attached.

161. REVISE drawing M4.5 EMCS DETAIL SHEET 4 – MECHANICAL DRAWING, file number 7687-12959, as attached.

162. REVISE drawing E0.1 ELECTRICAL PANELBOARD SCHEDULE SHEET #1, file number 7687-13047, as attached.

163. REVISE drawing E0.5 ELECTRICAL PANELBOARD SCHEDULE SHEET #5, file number 7687-13051, as attached.

164. REVISE drawing E0.9 ELECTRICAL PANELBOARD SCHEDULE SHEET #9, file number 7687-13055, as attached.

165. REVISE drawing E0.11 ELECTRICAL PANELBOARD SCHEDULE SHEET #11, file number 7687-13057, as attached.

166. REVISE drawing E0.12 ELECTRICAL PANELBOARD SCHEDULE SHEET #12, file number 7687-13058, as attached.

167. REVISE drawing E0.17 ELECTRICAL SCHEDULES AND DETAILS SHEET #1, file number 7687-13063, as attached.

168. REVISE drawing E1.0YS BASEMENT POWER PLAN – BUILDING SEGMENT Y SOUTH, file number 7687-13082, as attached.

169. REVISE drawing E1.4YS FOURTH FLOOR POWER PLAN – BUILDING SEGMENT Y SOUTH, file number 7687-13086, as attached.

170. REVISE drawing E1.4YN FOURTH FLOOR POWER PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13094, as attached.

171. REVISE drawing E1.1ZE FIRST FLOOR POWER PLAN – BUILDING SEGMENT Z EAST & B-1, file number 7687-13104, as attached.

172. REVISE drawing E1.3A THIRD FLOOR POWER PLAN – BUILDING SEGMENT A, file number 7687-13114, as attached.

173. REVISE drawing E2.3YS THIRD FLOOR LIGHTING PLAN – BUILDING SEGMENT Y SOUTH, file number 7687-13124, as attached.

174. REVISE drawing E2.4YS FOURTH FLOOR LIGHTING PLAN – BUILDING SEGMENT Y SOUTH, file number 7687-13125, as attached.

175. REVISE drawing E2.6YS SIXTH FLOOR LIGHTING PLAN – BUILDING SEGMENT Y SOUTH, file number 7687-13127, as attached.

176. REVISE drawing E2.0YN BASEMENT LIGHTING PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13128, as attached.

177. REVISE drawing E2.6YN SIXTH FLOOR LIGHTING PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13134, as attached.

178. REVISE drawing E2.4ZE FOURTH FLOOR LIGHTING PLAN – BUILDING SEGMENT Z EAST & B-1, file number 7687-13139, as attached.

179. REVISE drawing E3.2 ONE LINE DIAGRAM SHEET NO. 2, file number 7687-13144, as attached.

180. REVISE drawing E4.1 FIRE PROTECTIVE ALARM SYSTEM RISER DIAGRAM SH. #1, file number 7687-13148, as attached.

181. REVISE drawing P0.1 LEGEND SHEET PLUMBING, file number 7687-13163, as attached.

182. REVISE drawing P0.5 DETAIL SHEET #3 PLUMBING, file number 7687-13167, as attached.

183. REVISE drawing P1.4YN FOURTH FLOOR PLUMBING PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13184, as attached.

184. REVISE drawing P1.5YN FIFTH FLOOR PLUMBING PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13185, as attached.

185. REVISE drawing P1.6YN SIXTH FLOOR PLUMBING PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13186, as attached.

186. REVISE drawing P1.7YN ROOF PLUMBING PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13187, as attached.

187. REVISE drawing F0.1 FIRE PROTECTION LEGEND AND SCHEDULE SHEET #1, FILE NUMBER 7687-13211, as attached.

188. REVISE drawing F0.2 FIRE PROTECTION DETAIL SHEET #1, FILE NUMBER 7687-13212, as attached.

189. REVISE drawing F1.2YS SECOND FLOOR FIRE PROTECTION PLAN – BUILDING SEGMENT Y SOUTH, file number 7687-13216, as attached.

190. REVISE drawing F1.1YN FIRST FLOOR FIRE PROTECTION PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13222, as attached.

191. REVISE drawing F1.5YN FIFTH FLOOR FIRE PROTECTION PLAN – BUILDING SEGMENT Y NORTH, file number 7687-13226, as attached.

192. REVISE drawing F1.0ZE BASEMENT FIRE PROTECTION PLAN – BUILDING SEGMENT Z EAST & B-1, file number 7687-13228, as attached.

193. Drawing F1.0ZE BASEMENT FIRE PROTECTION PLAN – BUILDING SEGMENT Z EAST & B-1 as revised above:
REVISE note at Intramural Pool room Z020 reading “THIS AREA WITH “X” DOES NOT REQUIRE ANY SPRINKLER WORK” to read “SEE F1.1ZE FOR SPRINKLER HEADS THIS AREA WITH “X”.”

194. REVISE drawing F1.1ZE FIRST FLOOR FIRE PROTECTION PLAN – BUILDING SEGMENT Z EAST & B-1, file number 7687-13229, as attached.

195. REVISE drawing F1.1ZE FIRST FLOOR FIRE PROTECTION PLAN – BUILDING SEGMENT Z EAST & B-1 as revised above:
ADD note at upper portion of Intramural pool room Z020 reading “AREA WITH “X” OPEN TO BELOW”.

196. REVISE drawing F1.4ZE FOURTH FLOOR FIRE PROTECTION PLAN – BUILDING SEGMENT Z EAST & B-1, file number 7687-13232, as attached.

197. REVISE drawing F3.1 RISER DIAGRAM SHEET #1 – FIRE PROTECTION, file number 7687-13240, as attached.

198. REVISE drawing A4.57 PLAN AND SECTION DETAILS AT CORRIDOR Y101, Y102, Y103 & Y104, file 7687-12674, as attached.

199. REVISE drawing A7.5YN FIFTH FLOOR REFLECTED CEILING PLAN BUILDING SEGMENT Y NORTH, file 7687-12812, as attached.

200. REVISE drawing A7.6YN SIXTH FLOOR REFLECTED CEILING PLAN

BUILDING SEGMENT Y NORTH, file 7687-12813, as attached.

201. REVISE drawing A7.1ZE FIRST FLOOR REFLECTIVE CEILING PLAN BUILDING SEGMENT Z EAST & B-1, file 7687-12815, as attached

C. PRICE SCHEDULE: INCLUDE THE ATTACHED PRICE SCHEDULE.

D. GENERAL NOTE: Please ignore any reference to Amendment No.1 within the body of the revised specifications or drawings issued under this amendment. It should read Amendment No.4. It is a typographical error.

E. This Amendment shall be attached to the specifications and shall be a part thereof.

ELLA D. SNELL
CONTRACTING OFFICER
C, CONTRACTING DIVISION

SECTION 00800 - SPECIAL CONTRACT REQUIREMENTS

00800.1 **COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK**

a. The Contractor shall be required to (i) commence work under this contract within 5 Calendar days after the date the Contractor receives the Notice to Proceed (NTP), (ii) prosecute the work diligently, and (iii) complete all the work within **1,278** calendar days incorporating the following restrictions.

(1) Phase 1.01
There is a current contract Arvin CPDC PH-1A, which is primarily in the footprint of the former building B. This contract is ongoing. Access to the area of this contract is expected to be granted by 13 November 2001.

Construct new Physical Development Center, primarily-

- Early construction of new main electrical room.
- Demolish building F.
- Construct new buildings YS, YN, Z.
- Renovation and related work in building B.

(2) Phase 1.02 (Optional Bid Item)
Renovate existing building "A".
Phase 1.02 can not be started until Phase 1.01 is completed and Accepted.

If Phase 1.02 (optional item bid item) is awarded, an additional 180 calendar days will be added to the construction period to allow for completion of the work related to this option.

(3) Arvin CPDC will remain fully operational for the duration of the construction period.

(4) Coordination Period: The contractor shall reserve a 2 work-day period of time no later than one month following contract NTP and pre-construction conference for coordination. The contractor's project management team responsible for this project shall participate. During the 2 day coordination period the contractor and the Government will exchange information related to the government regulations and procedures, points of contact at USMA, relevant design information and general discussion about the execution and coordination of the project. The contractor shall dedicate his management team for this 2-day period to the Coordination Period.

(5). Should any or all-optional bid items be awarded, the optional bid items must be completed concurrently with the base bid items. The time stated for completion shall include the final cleanup of the premises in accordance with FAR 52.212-3 (APR 1984).

b. Location: The site of work is located at U.S. Military Academy, West Point, New York. The site of the work is on a military reservation and all rules and regulations issued by Commanding Officer covering general safety, security, fire protection and sanitation and pollution control requirements, etc., shall be observed by the Contractor. In addition to complying with these regulations, the Contractor shall require compliance of all his

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - DESCRIPTION

1.1 DESCRIPTION

The items listed below beginning with paragraph 4 refer to and are the same unit priced pay items listed in the Price Schedule. They constitute all of the unit priced items for the completion of the work. No direct or separate payment will be made for providing demolition work or construction work of items not indicated on drawings. Compensation for such services shall be included in the prices stipulated for unit price pay items listed herein, or are included in item 001.

1.2 COSTS

All costs for each unit bid price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having an "FIO" designation are for information only. Unless otherwise indicated, primary reviewer for these submittals will be the Contracting Officer (CO). The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Quantity Surveys; FIO

Quantity surveys shall be performed by the Contractor in accordance with the requirements specified in the Special Contract Clauses, Section 00800.

Submit originals of all field notes and all other records relating to quantity surveys.

1.4 RELATED REQUIREMENTS

1.4.1 Contract Clauses

00700.64 - Payments under fixed price construction contracts.

PART 2 - PRODUCTS

2.1 ESTIMATE OF QUANTITIES

The Variation in Estimated Quantities-Subdivided items clause is applicable to Base Bid Item Nos. 002 through 0020 inclusive and to Option Item No. OP02B.

2.1.1 Subdivided Items Clause

Variation from the estimated quantity in the actual work performed under any second or subsequent sub-item or elimination of all work such a second

or subsequent sub-item will not be the basis for an adjustment in contract unit price.

Where the actual quantity of work performed for items 002 through 020 and OP02B, inclusive, is less than 85% for the quantity of the first sub-item listed under such item, the Contractor will be paid at the contract unit price for the sub-item for the actual quantity of work performed and, in addition, an equitable adjustment shall be made in accordance with the clause FAR 52.211-18, Variation in Estimated Quantities.

If the quantity of work performed under items nos. 002 through 020 and OP02B, inclusive exceeds 115% or is less than 85% of the total estimated quantity of the sub-items under that item, and/or if the quantity of work performed under the second sub-item or any subsequent sub-items under item nos. 002 through 020 and OP02B exceeds 115% or is less than 85% of the estimated quantity of any such sub-item, and if such variations causes an increase or a decrease in the time required for performance of this contract the contract completion time will be adjusted in accordance with the clause 52-221-18 Variation in Estimated Quantities.

2.1.2 Mobilization and Administrative Costs

Contractor shall include all mobilization and administrative costs within the price for the first sub-item. Second sub-item shall only include labor, material and equipment costs required to perform second sub-item work.

2.2 FILL AND BACKFILL MATERIALS

Fill/backfill materials required to achieve required grades shall be included in item 001. Only structural fill shall be utilized within the footprint of the building.

PART 3 EXECUTION

3.1 ADJUSTMENT OF UNIT PRICES FOR INCREASE OR DECREASE OF ESTIMATED QUANTITIES

See CONTRACT CLAUSES Section 00700.

PART 4 MEASUREMENT AND PAYMENT

4.1 BASE BID AND OPTION ITEMS

4.1 BASE BID ITEMS 002, 003, 004 and OPTION ITEM OP02B

Base Bid Item 002 - Asbestos Containing Roofing System Materials
Base Bid Item 003 - Asbestos Containing Floor Tile & Mastic
Base Bid Item 004 - Asbestos Containing Window Caulking and Glazing Compounds

Option Item OP02B- Window Sash with Asbestos Containing Caulk and Glazing Compounds

Abate and properly dispose of off-site any material containing asbestos or material which was contaminated due to the presence of asbestos in the materials found to contain asbestos. Proper testing is required before the asbestos abatement work is authorized. Work shall be provided in accordance with the Specifications including Sections 01410, 02070, 02080, 02090 and 02120. The work includes all labor, materials, tools, and equipment for any demolition related to the abatement of the above items.

4.1.1 Measurement

Base Bid Item 002 - Asbestos Containing Roofing System Materials - Measurement shall be per square foot of surface area per 6″ of thickness including 2 complete 4 ply built up roofing systems and insulation with all related flashing and fasteners and complete removal of bitumen from structural deck.

Base Bid Item 003 - Asbestos Containing Floor Tile & Mastic - Measurement shall be per square foot of surface area per 1/8″ tile thickness with up 1/8″ thickness of mastic.

Base Bid Item 004 - Asbestos Containing Window Caulking and Glazing Compounds - Measurement shall be per linear foot of glazing compound and per linear foot of caulking. Glazing compound shall include exterior 3/4″ by 3/4″ glazing compound bead adhered to substrate two surfaces along with 3/4″ by 1/4″ interior glazing compound bead adhered to substrate on three surfaces. Caulking shall include 1/2″ by 1/2″ bead adhered to substrate on two surfaces.

Option Item OP02B – Window Sash with Asbestos Containing Caulk and Glazing Compounds – Measurement shall be per square foot of surface area parallel to the plane of the glass and shall include wood framing, blocking, glazing compound, glass, caulk/sealant, and the like.

4.1.2 Payment

Payment for the asbestos abatement work will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, testing, monitoring, tools, equipment necessary for the abatement, transportation and proper off post disposal of the items as specified. The methods of abatement, containments, location and areas indicated on the drawings are provided for information only. All other ACM are to be considered non-friable and are to be included in Item 001

4.2 BASE BID ITEM 006, DEMOLITION OF PCB TYPE LIGHTING BALLASTS:

4.2.1 Measurement

Measurement shall be per lighting ballast, regardless of size.

4.2.2 Payment

Payment for demolition of the existing PCB type lighting ballasts and all other items associated with such work will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, testing, monitoring, tools and equipment necessary for the demolition, transportation and proper off post disposal of PCB type lighting ballasts. Work shall be provided in accordance with the Specifications including Sections 01410, 02070, 02080, 02090 and 02120.

4.3 BASE BID ITEM 007, DEMOLITION OF MERCURY CONTAINING LAMPS:

4.3.1 Measurement

Measurement shall be per lamp or bulb of fluorescent or HID type regardless of size.

4.3.2 Payment

Payment for demolition of the existing mercury containing lamps will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, testing, monitoring, tools and equipment necessary for the demolition, transportation and proper off post disposal of mercury containing lamps. Work shall be provided in accordance with the Specifications including Sections 01410, 02070, 02080, 02090 and 02120.

4.4 BASE BID ITEM 008 DEMOLITION OF PCB CONTAINING TRANSFORMER OIL AND CARCASS:

4.4.1 Measurement

Measurement shall be per gallon of existing removed oil. Oil used for flushing or other purposes shall not be measured and shall be defined as “materials” for payment.

4.4.2 Payment

Payment for demolition of PCB containing transformer oil, carcass and all other items associated with such work will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, testing, monitoring, tools and equipment, necessary for the removal, transportation and proper off-post disposal of PCB containing transformer oil, transformer carcass(s) and all other items associated with such work. Work shall be provided in accordance with the Specifications including Sections 01410, 02070, 02080, 02090 and 02120.

4.5 BASE BID ITEMS 009 and 010, ROCK EXCAVATION

BASE BID ITEM 009 Rock excavation for trenches.
BASE BID ITEM 010 Horizontal/Vertical Rock excavation.

4.5.1 Measurement

Measurement for rock excavation shall be per cubic yard in place before excavation, see the specifications and drawings for payment lines.

4.5.2 Payment

Payment for rock excavation will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, tools and equipment necessary for the excavation, transportation and proper off government property disposal of rock. Work shall be in accordance with the Specifications including Section 02222.

4.5.3 Disposal

All excavated rock shall be transported and disposed of off government property. All costs for disposal off government property shall be included in the unit price noted above.

4.6 BASE BID ITEM 011, EXCAVATED MATERIAL (OTHER THAN ROCK) WITH REPLACEMENT STRUCTURAL FILL

4.6.1 Measurement

Measurement of excavated material shall be per cubic yard in place before excavation. This line item is for the excavation, as directed by the Contracting Officer, of unsuitable material beyond the limits of excavation required by the plans and specifications. Excavation for utility trenches and utility structures shall not be included in this base bid item, but

shall be included in Item 001. Excavated material is defined for this work as; existing earth and other fill materials not defined as rock in Specification Section 02222. All excavated materials are deemed unsatisfactory materials as defined in Specifications Section 02221 and 02316 and are to be disposed of off government property. Work shall be in accordance with the Specifications including Section 02221.

4.6.2 Payment

Payment for excavation and proper off post disposal of excavated material other than rock will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, dewatering, tools and equipment necessary for the excavation, transportation and proper off post disposal of excavated material.

4.7 BASE BID ITEM 012, EXCAVATED MATERIAL (OTHER THAN ROCK) WITH REPLACEMENT STRUCTURAL FILL.

4.7.1 Measurement

Measurement of excavated material and replacement structural fill shall be per cubic yard of excavated material in place before excavation. This line item is for the excavation, as directed by the contracting officer, of unsuitable material beyond the limits of excavation required by the specifications or the drawings. Excavation for utility trenches and utility structures shall not be included in this base bid item, but shall be included in Item 001. Excavated material is defined for this work as; existing earth and other fill materials not defined as rock in Specification Section 02222. All excavated materials are deemed unsatisfactory materials as defined in Specifications Section 02221 and 02316 and are to be disposed of off government property. Structural fill shall include provision, placement and compaction to properly and completely fill void of excavated material. Work shall be in accordance with the Specifications including Section 02221.

4.7.2 Payment

Payment for excavation and proper off post disposal of excavated material other than rock will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, dewatering, tools and equipment necessary for the excavation, transportation, proper off post disposal of excavated material, and the provision of compacted structural fill to properly and completely fill the void of excavated material.

4.8 BASE BID ITEM 013A AND 013B, ROCK BOLTING

BASE BID ITEM 013A – 142 KIP CAPACITY ROCK BOLTS FOR STABILIZATION OF EXISTING ROCK FACES COMPLETE
BASE BID ITEM 013B – 40 KIP CAPACITY ROCK BOLTS FOR FOUNDATION HOLD DOWN COMPLETE

4.8.1 Measurement

Measurement shall be per linear foot of installed length of rock bolts. No payment shall be made for rock bolts failing required tests.

The contractor shall assume that twelve (12) rock bolts with a total combined length as indicated in the Price Schedule shall be included in unit price item 013A. The contractor shall also assume that all rock bolts for stabilization of existing rock faces shall be installed not more than 70 feet above the adjacent working surface. The location of rock bolts for

stabilization of existing rock faces shall be as directed by the Contracting Officer.

Rock bolts for foundation hold down, unit price item 013B, shall be provided as indicated.

4.8.2 Payment

Payment for rock bolting will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, tools, testing and equipment necessary for the complete provision of rock bolting. Work shall be provided in accordance with the Specifications including Section 02223.

4.9 BASE BID ITEM 014A, 014B, 014C, AND 014D, DRILLED REINFORCED CONCRETE CAISSONS

BASE BID ITEM 014A – 30 INCH (2’-6”) NOMINAL DIAMETER DRILLED REINFORCED CONCRETE CAISSONS COMPLETE
BASE BID ITEM 014B – 42 INCH (3’-6”) NOMINAL DIAMETER DRILLED REINFORCED CONCRETE CAISSONS COMPLETE
BASE BID ITEM 014C – 54 INCH (4’-6”) NOMINAL DIAMETER DRILLED REINFORCED CONCRETE CAISSONS COMPLETE
BASE BID ITEM 014D – 66 INCH (5’-6”) NOMINAL DIAMETER DRILLED REINFORCED CONCRETE CAISSONS COMPLETE

4.9.1 Measurement

Measurement shall be per linear foot at centerline of installed length of drilled reinforced concrete caissons of the indicated nominal diameters, including cap at each caisson.

The contractor shall assume that: 2 caissons shall be included in unit price item 014A; 20 caissons shall be included in unit price item 014B; 16 caissons shall be included in unit price item 014C, and 10 caissons shall be included in unit price item 014D. The contractor shall assume that all caissons shall be a minimum of 3 feet in length and a maximum of 30 feet in length.

4.9.2 Payment

Payment for drilled reinforced concrete caissons will be made at the unit price bid and will constitute full compensation for providing all excavation, removal, disposal, labor, transportation, materials, tools, testing, inspection and equipment necessary for the complete provision of drilled reinforced concrete caissons of the indicated diameters. Work shall be provided in accordance with the Specifications including Section 02466. No payment will be made for rejected caissons.

4.10 BASE BID ITEM 015 TEMPORARY STEEL CASINGS LEFT IN PLACE

4.10.1 Measurement

Measurement shall be per pound of steel casing for temporary steel casing left in place, at the direction of the Contracting Officer, for all caisson diameters.

4.10.2 Payment

Payment for temporary steel casing left in place will be made at the unit bid price and will constitute full compensation for providing all labor,

transportation, materials, tools, disposal, removal, testing, inspection and equipment necessary for the complete provision of temporary steel casings left in place for all caisson diameters. Payment for temporary steel casings not left in place shall be included in unit price items 014A, 014B, 014C and 014D.

Work shall be provided in accordance with the specifications including Section 02466. No payment will be made for temporary steel casing left in place as part of rejected caissons.

4.11 BASE BID ITEM 016 PROOF TEST HOLES

4.11.1 Measurement

Measurement shall be per proof test hole of size and type specified in section 02466 DRILLED FOUNDATION CAISSONS. All proof test holes shall be assumed to be 66 inches in depth.

4.11.2 Payment

Payment for proof test holes will be made at the unit price bid and will constitute full compensation for furnishing all labor, materials, tools, inspection and equipment necessary for the complete provision of proof test holes. Work shall be provided in accordance with the Specifications including Section 02466.

4.12 BASE BID ITEM 017 – LEAN CONCRETE FILL FOR FOUNDATION BEARING

4.12.1 Measurement

Measurement shall be per cubic yard in place for cast-in-place lean concrete fill required due to variations in under-laying existing rock. This line item is for lean concrete fill to provide bearing for building foundations where existing rock is below required elevations. Lean concrete fill required due to excavation of rock beyond the depth(s) directed by the Contracting Officer and dimensions indicated on the Drawings or called for by the Specifications shall not be included in this base bid item, but shall be included in Item 001. Lean concrete fill for foundation bearing shall include provision, forming, placement, consolidation, and curing to properly and completely fill volumes required.

4.12.2 Payment

Payment for lean concrete fill for foundation bearing will be made at the unit bid price and will constitute full compensation for furnishing all labor, materials, tools, inspections, testing and equipment necessary for the complete provision of lean concrete fill for foundation bearing. Work shall be in accordance with the Specifications including Section 03300.

4.13 BASE BID ITEM 018 – STRUCTURAL CONCRETE FOR ADDITIONAL DEPTH FOR FOUNDATIONS

4.13.1 Measurement

Measurement shall be per cubic yard in place for cast-in-place structural concrete for additional depths required due to variations in under-laying existing rock. This line item is for cast-in-place structural concrete to provide additional depth for building foundations where existing rock is below required elevations. Cast-in place structural concrete required due to excavation of rock beyond the depth(s) directed by the Contracting Officer and dimensions indicated on the Drawings or called for by the

Specifications shall not be included in this base bid item, but shall be included in Item 001. Cast-in-place structural concrete for additional depths shall include provision, placement, consolidation, and curing to properly and completely fill volumes required. Reinforcing and formwork for additional depth for building foundations shall be included in items 019 and 020.

4.13.1 Payment

Payment for cast-in-place structural concrete for additional foundation depths will be made at the unit bid price and will constitute full compensation for furnishing all labor, materials, tools, inspections, testing and equipment necessary for the complete provision of cast-in-place structural concrete for additional foundation depths. Work shall be in accordance with the Specifications including Sections 03100, 03200 and 03300.

4.14 BASE BID ITEM 019 – STEEL REINFORCING FOR ADDITIONAL DEPTH FOR FOUNDATIONS

4.14.1 Measurement

Measurement shall be per pound in place for steel reinforcing for additional depths required due to variations in under-laying existing rock. This line item is for steel reinforcing for cast-in-place structural concrete to provide additional depth for building foundations where existing rock is below required elevations. Steel reinforcing for cast-in-place structural concrete required due to excavation of rock beyond the depth(s) directed by the Contracting Officer and dimensions indicated on the Drawings or called for by the Specifications shall not be included in this base bid item, but shall be included in Item 001. Steel reinforcing for cast-in-place structural concrete for additional depths shall include provision, fabrication, placement, and incorporation to properly reinforce cast-in-place concrete required. Cast-in-place structural concrete and formwork for additional depth for building foundations shall be included in items 018 and 020.

4.14.2 Payment

Payment for steel reinforcing for cast-in-place structural concrete for additional foundation depths will be made at the unit bid price and will constitute full compensation for furnishing all labor, materials, tools, inspections, testing and equipment necessary for the complete provision of steel reinforcing for cast-in-place structural concrete for additional foundation depths. Work shall be in accordance with the Specifications including Sections 03100, 03200 and 03300.

4.15 BASE BID ITEM 020 – FORMWORK FOR ADDITIONAL DEPTH FOR FOUNDATIONS

4.15.1 Measurement

Measurement shall be per square foot of formed surface for additional depths required due to variations in under-laying existing rock. This line item is for formwork for cast-in-place structural concrete to provide additional depth for building foundations where existing rock is below required elevations. Formwork for cast-in-place structural concrete required due to excavation of rock beyond the depth(s) directed by the Contracting Officer and dimensions indicated on the Drawings or called for by the Specifications shall not be included in this base bid item, but shall be included in Item 001. Formwork for cast-in-place structural concrete for additional depths shall include provision, fabrication,

placement, preparation and removal to properly form cast-in-place concrete required. Cast-in-place structural concrete and steel reinforcing for additional depth for building foundations shall be included in items 018 and 019.

4.15.2 Payment

Payment for formwork for cast-in-place structural concrete for additional foundation depths will be made at the unit bid price and will constitute full compensation for furnishing all labor, materials, tools, inspections, testing and equipment necessary for the complete provision of formwork for cast-in-place structural concrete for additional foundation depths. Work shall be in accordance with the Specifications including Sections 03100, 03200 and 03300.

4.16 BASE BID ITEM 021 MASONRY CLEANING

BASE BID ITEM 021A – MASONRY CLEANING METHOD 1) WATER WITH BRUSHES
BASE BID ITEM 021B - MASONRY CLEANING METHOD 2) WATER WITH MILD DETERGENT
BASE BID ITEM 021C - MASONRY CLEANING METHOD 3) WATER WITH STRONGER DETERGENT.
BASE BID ITEM 021D – MASONRY CLEANING METHOD 4) WATER WITH STRONGER DETERGENT PLUS AMMONIA
BASE BID ITEM 021E - MASONRY CLEANING METHOD 5) WATER WITH STRONGER DETERGENT PLUS VINEGAR (NOT TO BE USED ON CALCAREOUS MASONRY)
BASE BID ITEM 021F – MASONRY CLEANING METHOD 6) STRONGER CHEMICAL CLEANERS
BASE BID ITEM 021G – MASONRY PAINT REMOVAL

4.16.1 Measurement

Measurement shall be per square foot of surface area measured parallel to the plane of the surface (base plane area). Reveals, mouldings, arises and the like of up to 1″ in any dimension shall be included in the base plane area. The surface area of reveals, mouldings, arises and the like projecting more that 1″ shall be the sum of the areas of the contours/surfaces of the reveals, mouldings, arises and the like. This line item is for masonry cleaning of the large stone crest previously salvaged as specified and for masonry cleaning, as directed by the contracting officer, beyond that required by the specifications or drawings.

4.16.2 Payment

Payment for masonry cleaning shall be made at the unit price bid and will constitute full compensation for providing all labor, transportation, materials, tools, testing, protection, inspection and equipment necessary for the complete provision of masonry cleaning of the indicated types. Work shall be provided in accordance with the Specifications including Section 04900.

4.17 BASE BID ITEM 022 PLASTER PATCHING AND PAINTING

4.17.1 Measurement

Measurement shall be per square foot of surface area measured parallel to the plane of the surface (base plane area). Reveals, mouldings, arises and the like of up to 1″ in any dimension shall be included in the base plane area. The surface area of reveals, mouldings, arises and the like projecting more that 1″ shall be the sum of the areas of the contours/surfaces of the reveals, mouldings, arises and the like. This line item is for plaster patching and painting, as directed by the

contracting officer, beyond that required by the specifications or drawings.

4.17.2 Payment

Payment for plaster patching and painting shall be made at the unit price bid and will constitute full compensation for providing all labor, transportation, materials, tools, testing, protection, inspection and equipment necessary for the complete provision of plaster patching and painting. Work shall be provided in accordance with the Specifications including Sections 09215 and 09900.

The work of this item shall not include the removal and replacement of materials required to incorporate new work, to adjust existing work to incorporate new work, to incorporate removed and relocated existing work such as mouldings and trims, or the like, which shall be included in item 001.

4.18 BASE BID ITEM 023 EXISTING HISTORICALLY SIGNIFICANT PAINT SCRAPING AND REFINISHING TO MATCH EXISTING DECORATIVE PAINTING

4.18.1 Measurement

Measurement shall be per square foot of surface area measured parallel to the plane of the surface area of up to 20 mils paint thickness. This line item is for existing historically significant paint scraping and refinishing of exposed substrate to match existing decorative painting, as directed by the contracting officer, beyond that required by the specifications or drawings.

4.18.2 Payment

Payment for existing historically significant paint scraping and refinishing to match existing decorative painting shall be made at the unit price bid and will constitute full compensation for providing all labor, transportation, materials, tools, testing, protection, pattern tracing, pattern layout/application, color matching, inspection and equipment necessary for the complete provision of existing historically significant paint scraping and refinishing to match existing decorative painting. Work shall be provided in accordance with the Specifications including Sections 01045, 01120, 02090, 02220, 09900.

The work of this item shall not include the removal/refinishing of materials required to incorporate new work, to adjust existing work to incorporate new work, to incorporate removed and relocated existing work such as mouldings and trims, or the like, which shall be included in item 001.

-- End of Section --

SECTION 01030

OPTIONS

PART 1 GENERAL

1.1 SUMMARY

This section specifies administrative and procedural requirements for options along with their technical descriptions.

1.2 DEFINITIONS

"Option" means a unilateral right in a contract by which, for a specified time, the Government may elect to purchase additional supplies or services called by the contract, or may elect to extend the term of the contract. Notice To Proceed of individual options as noted below shall not affect the Completion Date of the base Contract as determined by the base Contract Notice to Proceed.

1.3 GENERAL

The extent of work for each option is indicated on the drawings. In the event of any differences between the drawings and the options described below, the descriptions below shall govern.

1.4 COORDINATION

The Contractor shall coordinate related work and modify or adjust adjacent work as necessary to ensure that work affected by each exercised option is complete and fully integrated into the project. The Contractor shall provided appropriate detailing to properly terminate or transition from option to base bid work and option to option work. The Contracting Officer shall review and approve in writing any and all Contractor generated documents. The Contracting Officer shall review and approve in writing any and all Contractor generated documents.

1.5 NOTIFICATION

Each optional bid item, if awarded, will be awarded according to the schedule below. However, the Government is under no obligation to award any optional bid item.

Optional bid item OP01 if awarded, will be awarded by the Government at award of the base Contract.

Optional bid item OP02 if awarded, will be awarded by the Government at award of the base Contract.

Optional bid item OP03 if awarded, will be awarded by the Government at award of the base Contract.

Optional bid item OP04 if awarded, will be awarded by the Government within 540 calendar days after Notice to Proceed for the base Contract.

Optional bid item OP05 if awarded, will be awarded by the Government within 700 calendar days after Notice to Proceed for the base Contract.

Optional bid item OP06 if awarded, will be awarded by the Government at award of the base Contract.

Optional bid item OP07 if awarded, will be awarded by the Government at award of the base Contract.

Optional bid item OP08 if awarded, will be awarded by the Government at award of the base Contract.

Optional bid items OP201 and OP104 if awarded, will be awarded by the Government within 270 calendar days after Notice to Proceed for the base Contract.

Optional bid item OP206 if awarded, will be awarded by the Government at award of the base Contract.

Optional bid item OP207 if awarded, will be awarded by the Government within 360 calendar days after Notice to Proceed for the base Contract.

Optional bid items OP101 through OP113 if awarded, will be awarded by the Government within 800 calendar days after Notice to Proceed for the base Contract.

1.6 SCHEDULE

A "Schedule of Options" is included as part of this section. Specification sections, referenced in the schedule contain requirements for materials and methods necessary to achieve the work described under each option.

Include as part of each option, miscellaneous devices, accessory objects and similar items incidental to or required for a complete installation whether or not mentioned as part of the option.

PART 2 PRODUCTS NOT USED

PART 3 EXECUTION

3.1 SCHEDULE OF OPTIONS

3.1.1 Option No. OP01: HAYES GYM SPRINKLERS

Provide all the work necessary in providing a new and complete sprinkler system in Building A, Hayes Gym. See Drawings including A5.12A, F1.0A, F1.1A, F1.2A, F1.3A, & F1.4A and Specifications including Sections 02220, 13080, 13851, and 13930. Spaces to receive sprinklers include Fitness Room A102, Lobby Room A108, Fitness Room A103. Second Floor: Gymnasium Room A202. Third Floor: Running Track Room A308, Offices Room A302 and A303. Note that North and South stair towers all floors and spaces within the towers, (except North and south mechanical rooms), and First floor Lobby A108 are included in the option. Note that all Basement spaces are presently sprinklered.

3.1.2 Option No. OP02: HAYES GYM FIRST FLOOR

3.1.2.1 Option No. OP02A:

Provide all the work necessary, except Asbestos Abatement, in providing programmatic modifications in Building A, Hayes Gym, First Floor, including:

1. Demolition of existing interior construction.

2. Construction of new programmatic elements including Fitness Room A102, ~~and~~ Fitness Room A103, Office A106, Storage A107, Storage A109, Office A110, Sound A111 and Sound A112.

3. Adjustments to sprinkler system provided as part of option OP01, if awarded, to accommodate new programmatic elements. Contractor shall assume that option OP01 shall be awarded for purposes of bidding this option.

See Drawings, including D1.1A1, A1.1A1, A5.10A, A5.11A, A5.12A, M1.1A1, E1.1A1, E2.1A1, TC1.1A1, F1.1A1, and P1.1A1.

3.1.2.2 Option No. OP02B:

Provide asbestos Abatement work related to work required under option OP02A as required above. See drawings including AR1.1A and specifications including Section 01025.

3.1.3 Option No. OP03: RACQUETBALL COURTS SHELL SPACE

Delete the provision of racquetball court systems, finish systems and provide all work required to prepare remaining area for future installation of racquetball court systems by others. The work of this option includes:

1. Delete all work necessary in providing six (6) racquetball courts in Building YS, rooms Y411, Y412, Y413, Y420, Y421, Y422 and Racquetball Corridor room Y420. Work includes the deletion of court panel and glass wall systems, floor systems, ceiling systems, court light fixtures, court doors and related accessories.

2. Delete all work necessary in providing gypsum wall board ceilings and soffits, acoustical ceilings, and the gypsum wall board column enclosure.

3. Provide 3/4 inch thickness AC plywood on 2x4 wood blocking sloped transition surface from floor slab at doors into remaining space to recessed floor slab. Sloped transition surface shall slope at 1 in 12 maximum and shall extend full width of doors and include matching side return ramps at each door jamb.

4. Seal exposed concrete floor slabs in remaining space.

5. Delete branch ducts and diffusers and provide sidewall type registers on branch duct takeoffs at supply and return/exhaust ductwork serving affected space. Provide as indicated supply ductwork mains from the respective air handling unit to affected space. Provide return ductwork mains from the air handling unit return fan to the affected space. Provide all piping as indicated.

6. Delete lighting as shown in rooms noted above. Provide type A lighting fixtures at 10' by 12' on centers with a fixture starting a maximum of 5 ft from any wall, wired similar to the method shown on drawing E2.4YS, except fixtures north of column line 5.6 (north group) shall be switched together and fixture south of column line 5.6 (south group) shall be switched together. Delete occupancy sensors and provide 3-way switching for north group light fixtures and for south group of light fixtures with switches adjacent to doors Y410A and Y410B as directed by contracting officer.

3.1.4 Option No. OP04: CLIMBING WALL RELATED ITEMS

This option is to provide preparation work for future installation of climbing wall systems.

The work of this option includes:

1. Providing vertical steel tubes along grid lines K, 15 and 17 as shown on the Drawings, including A1.3ZE, A1.4ZE, A1.5ZE, and A2.38 sections 2 & 3.

2. Providing glazed curtain wall enclosure system, doors and glass for Climbing Wall room Z307 at third floor as shown on drawings including A1.3ZE, Elevation A2.33, Details A4.56 and as required in the Specifications including Sections 08810 and 08900.

The work of the base bid includes:

1. Providing Gypsum wall board and related steel framing systems extended to close openings in gypsum wall board surfaces that would be required for provision of glazed curtain wall systems.

2. Providing masonry and related systems extended to close openings in masonry surfaces that would be required for provision of glazed curtain wall systems.

3. Providing 3/4 inch thickness AC plywood on 2x4 wood blocking sloped transition surface from surrounding floor slab to recessed floor slab. Sloped transition surface shall slope at 1 in 12 maximum and shall extend full perimeter of floor edge not abutting a wall.

3.1.5 Option No. OP05: STONE CREST

Provide all the work necessary to install the Government supplied stone Crest on the north partition of Observation Room Z120 as shown on Drawings, including A1.1ZE between Grid lines C and D along Grid line 26 and on Detail 17/A5.11ZE, and Detail 2/A3.45. Provide cleaning of the Crest as specified in Section 04900.

The work of the base bid includes providing partition type N8, 2 hour rated, across entire partition between column line C and D along grid line 26.

3.1.6 OP06: ADMINISTRATION AREA SHELL SPACE

Delete the provision of partitions, doors, borrowed lites, ceiling systems, floor finishes, electrical systems, telecommunication systems, paging/audio/video systems, mechanical systems and the like as required below and provide all work required to prepare remaining area for future installation of partitions, doors, borrowed lites, ceiling systems, floor finishes except carpet which shall be included in the work of option OP112, electrical systems, telecommunication systems, paging/audio/video systems, mechanical systems and the like by others within the area indicated on the drawings. The work of this option includes:

1. Delete non-fire rated partitions, platform, ramps, casework/millwork, doors, frames, hardware, borrowed lites, glass, floor finishes except carpet which shall be included in the work of option OP112, and ceiling systems.

2. Delete branch ducts and diffusers and provide sidewall type registers on branch takeoffs at supply and return/exhaust ductwork serving affected

space. Provide supply ductwork mains from the respective air handling unit to VAV boxes. Provide supply ductwork mains from VAV boxes. Provide return ductwork mains from the air handling unit return fan to the affected space. Provide all piping as indicated. Provide thermostats with 50 feet of wire coiled and mounted to the side of their associated VAV box.

3. Delete telecommunication work serving area indicated, except cable tray which shall be provided as indicated.

4. Delete all paging/audio/video systems serving indicated area. Provide conduit/conductors/cabling as required to maintain service to all other areas. Provide seven (7) 12 inch by 12 inch by 4 inch deep surface mounted junction boxes with 1 inch diameter conduit from each to room Y203. Provide each conduit with pull string. Junction boxes shall be mounted at approximately 12 feet above finished floor at southeast corner of affected area as directed by contracting officer. Contractor shall assume that option OP101 shall be awarded for purposes of bidding this option.

5. Delete power outlets that are shown. Provide one duplex outlet per 25 feet of wall length at perimeter of affected area, wired in a similar manner as shown on drawing E1.3ZE.

6. Delete lighting with related switching and occupancy sensors within area indicated. Provide type A lighting fixtures at 10' by 12' on centers with a fixture starting a maximum of 5 ft from any wall, wired similar to the method shown on drawing E2.3ZE. Fixtures between column lines L.5 and J, between column line J and G, between column lines G and D, and between column line D and B shall respectively be switched together. Provide 3-way switching for each group of light fixtures with switches adjacent to doors Z320B and Z340A as directed by contracting officer.

7. Delete plumbing fixture type P-7 in Kitchen room Z333 and Human Performance Lab room Z350. Provide shut-off valves on supply piping. Provide connection for drain with 90 degree elbow and vertical 12 inches of pipe and cap at each location.

8. Provide upright non-concealed sprinkler heads with not less than 24 inches of horizontal pipe and elbows to branch line in lieu of required heads in the locations shown.

3.1.7 Option No. OP07: DPE WEIGHTS SHELL SPACE

Delete the provision of partitions, doors, ceiling systems, floor finishes, equipment, electrical systems, telecommunication systems, paging/ audio/ video systems, mechanical systems and the like as required below and provide all work required to prepare remaining area for future installation of partitions, doors, ceiling systems, floor finishes, electrical systems, telecommunication systems, paging/audio/video systems, mechanical systems and the like by others within the area indicated on the drawings. The work of this option includes:

1. Delete non-fire rated partitions, casework/millwork, doors, frames, hardware, glass mirrors, floor finishes, ceiling systems and equipment.

2. Seal exposed concrete floor slabs in remaining space.

3. Delete branch ducts and diffusers and provide sidewall type registers on branch takeoffs at supply and return/exhaust ductwork serving affected space. Provide supply ductwork mains from the respective air handling

unit to affected space. Provide return ductwork mains from the air handling unit return fan to the affected space. Provide all piping as indicated. Provide thermostats indicated.

4. Delete telecommunication work serving area indicated, except outlets 3A004 and 3B012 which shall be provided as indicated.

5. Delete all paging/audio/video systems serving area indicated. Provide conduit/conductors/cabling as required to maintain service to all other areas. Provide two (2) 12 inch by 12 inch by 4 inch deep surface mounted junction boxes with 1 inch diameter conduit from each to room Y203. Provide each conduit with pull string. Junction boxes shall be mounted at approximately 12 feet above finished floor at northeast corner of affected area as directed by contracting officer. Contractor shall assume that option OP101 shall be awarded for purposes of bidding this option.

6. Delete power outlets that are shown except outlets at south partition which shall be provided as indicated. Provide one duplex outlet per 25 feet of wall length at perimeter of affected area at east, north and west walls, wired in a similar manner as shown on drawing E1.3YS.

7. Delete lighting with related switching and occupancy sensors within area indicated. Provide type A lighting fixtures at 10' by 12' on centers with a fixture starting a maximum of 5 ft from any wall, wired similar to the method shown on drawing E2.3YS. Fixtures north of column line 5.6 (north group) shall be switched together and fixture south of column line 5.6 (south group) shall be switched together. Provide 3-way switching for each group of light fixtures with switches adjacent to doors Y320B and Y320C for north group and doors Y320A and Y320C for south group as directed by contracting officer.

8. Delete plumbing fixture type P-14A at east and at west partitions of affected area. Provide shut-off valves on supply piping. Provide connection for drain with 90 degree elbow and vertical 12 inches of pipe and cap at each location.

9. Provide upright non-concealed sprinkler heads with not less than 24 inches of horizontal pipe and elbows to branch line in lieu of required heads in the locations shown.

3.1.8 Option No. OP08: BOXING AND BOXING BALCONIES SHELL SPACE

Delete the provision of partitions, doors, ceiling systems, floor finishes, electrical systems, telecommunication systems, paging/ audio/ video systems, mechanical systems and the like as required below and provide all work required to prepare remaining area for future installation of partitions, doors, ceiling systems, floor finishes except carpet which shall be included in the work of option OP112, electrical systems, telecommunication systems, paging/audio/video systems, mechanical systems and the like by others within the area indicated on the drawings. The work of this option includes:

1. Delete non-fire rated partitions, doors, frames, borrowed lites, hardware, glass, glass mirrors, floor finishes except carpet which shall be included in the work of option OP112, ceiling systems. Contractor shall assume that option OP104 and OP106 shall not be awarded for purposes of bidding this option. Stairs and railing are required to be provided whether this option is award or not. As a part of the work of this option provide at east partition of Boxing Office room Y522 partition type 2C1 between ends of rails at balcony edge.

2. Seal exposed concrete floor slabs in remaining space.

3. Delete branch ducts and diffusers and provide sidewall type registers on branch takeoffs at supply and return/exhaust ductwork serving affected space. Provide supply ductwork mains from the respective air handling unit to affected space. Provide return ductwork mains from the air handling unit return fan to the affected space. Provide all piping as indicated. Provide thermostats indicated.

4. Delete telecommunication work serving area indicated.

5. Delete all paging/audio/video systems serving indicated area. Provide conduit/conductors/cabling as required to maintain service to all other areas. Provide two (2) 12 inch by 12 inch by 4 inch deep surface mounted junction boxes with 1 inch diameter conduit from each to room Y203. Provide each conduit with pull string. Junction boxes shall be mounted at approximately 11 feet above finished floor at north partition of Storage room Y444 as directed by contracting officer. Contractor shall assume that option OP101 shall be awarded for purposes of bidding this option.

6. Delete power outlets that are shown at deleted partitions.

7. Delete lighting within area indicated. Provide type A lighting fixtures at 10' by 12' on centers with a fixture starting a maximum of 5 ft from any wall, wired similar to the method and utilizing switching shown on drawing E2.4YS and E2.5YS. Locate switches as directed by contracting officer.

8. Delete plumbing fixtures type P-14 at Boxing room Y435 and at Boxing room Y436. Provide shut-off valves on supply piping. Provide connection for drain with 90 degree elbow and vertical 12 inches of pipe and cap at each location.

9. Provide upright non-concealed sprinkler heads with not less than 24 inches of horizontal pipe and elbows to branch line in lieu of required heads in the locations shown.

3.1.9 Option No. OP201: TERRAZZO FLOORING

Provide all work necessary to provide Terrazzo Flooring in lieu of stained concrete floor finish at indicated areas. See Drawings, including A9.01 Thru A9.06, and A10.00. See Specifications including Section 09000 Finish Schedule for locations affected by this option, and Section 09445 Resinous Terrazzo Flooring.

3.1.10 Option No. OP206: TERRAZZO STAIR TREADS AND RISERS

Provide all work necessary to provide precast Terrazzo stair treads, landings and terrazzo risers in lieu of stained concrete stair treads, landings and painted risers at all levels of Central Stair #5 located in Building YN. See Drawings, including A1.0YN, A1.1YN, A1.2YN, A1.3YN, & A1.4 YN, A1.1YS, A1.2YS, and A1.3YS; Enlarged Plans A6.16, A6.17, Details on Drawing A6.23, A6.24 Detail 2. See Specifications including Section 09000 Finish Schedule for locations affected by this option, Section 09445 Resinous Terrazzo Flooring, and 09446 Precast Terrazzo Stair Treads/Risers.

3.1.11 Option No. OP207: RAILING

Provide guardrail type 55c4 in lieu of guardrail type 55c3 and provide guardrail/handrail type 55b/c2 in lieu of guardrail/handrail type 55b/c1 at atrium which includes stair #5. Atrium includes all floors/spaces between column lines 14 and 17 and between column lines C and S.2.

3.1.12 Option No. OP101: SOUND SYSTEMS EQUIPMENT, AUDIO/VISUAL EQUIPMENT AND CENTRAL PAGING SYSTEM EQUIPMENT

Provide all work required in providing sound systems equipment; audio/visual equipment and central paging equipment as required below. This option includes providing equipment racks, all equipment in the racks and connections to produce fully functioning systems. See Drawings including PG series, and Specifications including Section 16800. Equipment includes:

1. Central Paging System: Paging Microphone Station, Paging Router/Multiprocessor, Paging Microphone Station Input Receptacle, Power Amplifiers for Central Paging System Loudspeakers, Audio Equipment Rack, Rack Power Wiring, System Power Control, Power Amplifier Monitor Selector, Monitor Test Point, Regulated 24V DC Power Supply, “Do Not Disturb” Switch, Master Fire Alarm Switching Relay, Emergency Page Switching Relay, DC power lines, and Isolation Transformer.

2. Pool Sound Systems: Push to Talk Microphone, Announcement Microphone, Microphone Foot Switch Assembly, Microphone Foot Switch Receptacle, Rack Mounted Mixer, Priority Mic/Line Mixer, Digital Control Attentuator, Feedback Suppressor, 1/3-Octave Equalizer, Compressor/Limiter, Power Amplifier for Loudspeakers, Audio Equipment Rack, System Power Control, Audio Switching Relays, Monitor Test Points, Audio Cassette/Compact Disc Player, and AM/FM Tuner.

3. DPE Weights, CS Strength Development and PE Fitness Sound Systems: Push to talk Microphone, Audio Cassette/Compact Disc Player, AM/FM Tuner, Priority Mic/Line Mixer, Compressor/Limiter, Power Amplifier For ceiling Mounted Loudspeakers, System Power Control, Audio Switching Relays, Wall-Mounted Equipment Rack, Monitor test Points, Videocassette Player/Recorder, Infrared Repeater, Paging Ducker Assembly, and Handheld Wireless Microphone System.

4. Sports Medicine Sound System: Audio Cassette/Compact Disc Player, AM/FM Tuner, Priority Mic/Line Mixer, Distribution Amplifier, Power Amplifier for Ceiling Mounted Loudspeaker, System Power Control, Audio Switching Relays, Wall Mounted Equipment rack, and Monitor Test Points.

5. Intramural Wrestling, and Boxing Sound Systems: Push to talk Microphone, Priority Mic/Line Mixer, Compressor/Limiter, Power Amplifier for Loudspeakers, System Power Control, Audio Switching Relays, Wall Mounted Equipment Rack, Monitor Test Points, and Audio Cassette/Compact Disc Player.

6. Varsity Wrestling Z220 Sound System: Rack Mount Mixer, Audio Cassette/Compact Disc Player, Headset Wireless Microphone System, Roll-Around Equipment Rack, Push To Talk Microphone, A/V Line-Level Input Panel, 4-Channel Mixer, Priority Mic/Line Mixer, Buffer/Distribution Amplifier, 1/3-Octave Equalizer, Compressor/Limiter, Power Amplifier for Ceiling mounted Loudspeakers, System Power Control, Audio Switching Relays, Wall Mounted Equipment Rack, Monitor Test Points, Videocassette Player/Recorder, Infrared Repeater, Video Distribution Amplifier, 5-Disc Compact Disc Player, Dual Well Audio Cassette Recorder/player, AM/FM Tuner, and TV Tuner.

7. Gymnasium Y240 Sound System: Push to Talk Microphone, Announcement Microphone, Microphone Floor Stand, A/V Interface Panel, Passive Audio Combiner, Priority Mic/Line Mixer, 4-Channel A/V Input Mixer, 4 X 1 Mixer, 2 x 6 Digital Signal Processor, Power Amplifier for Loudspeakers, Audio Switching Relay, Emergency Page Relay, Audio Equipment Rack, Rack Power Wiring, System Power Control, Audio Cassette/Compact Disc Player, Am/FM Tuner, TV Tuner, and Portable Equipment Rack and Components (Rack Mounted Mixer, Audio Cassette/Compact Disc Player, Handheld Wireless Microphone System, Portable Equipment Rack).

8. Multi-Purpose Room #1: Announcement Microphone, Microphone Floor Stand, Stereo A/V Interface, 4-Channel A/V Input Mixer, 4 x 1 Mixer, Feedback Supressor, Paging Ducker Assembly, 2 x 4 Digital Signal Processor, Power Amplifier for Ceiling Loudspeakers, Power Amplifiers for Centerline Subwoofer, Audio Switching relay, Emergency Page Relay, System Power Control, Wall Mounted Audio Equipment Rack, Monitor Test Points, Videocassette Player/Recorder, Infrared Repeater, Video Distribution Amplifier, and Roll Around Equipment Rack (Rack Mounted Mixer, Dual Well Audio Cassette Recorder/Player, 100 Disc Compact Disc Changer, Headset Wireless Microphone System, Roll-Around Equipment Rack).

9. Media Project Room A/V System: Miniature Unidirectional Stand Microphones, Microphone Stand Clamp, Microphone Floor Stand, Lavalier Wireless Microphone System, Wireless Antenna Splitter and Antenna, Podium Floor Box, Automatic Microphone Mixer, Buffer/Distribution Amplifier, 1/3-Octave Equalizer, Compressor/Limiter, Feedback Supressor, Paging Ducker Assembly, Power Amplifier for Loudspeakers, Audio Switching relays, Audio Equipment Rack, Rack Power Wiring, System power Control, Monitor Test Points, 5-Disc Compact Disc Player, Dual Well Audio cassette Recorder/Player, Recording Output Receptacles, 600 Ohm 1:1 Impedance Ratio Transformer, Hearing Assitance System, Audio/Video Switcher System Switch, Computer Video Interface – Wall Mounted, Computer Video Interface – Lecturn Mounted, Projection Screen, Video Cassette player/Recorder, Video Distribution Amplifier, Video projector, Video projector Lift, TV Tuner, Remote Control System.

10. Gymnasium Y440 Sound System: Push to Talk Microphone, Announcement Microphone, Microphone Floor Stand, A/V Interface Panel, Passive Audio Combiner, Priority Mic/Line Mixer, 8-Channel Microphone Mixer, 4-Channel A/V Input Mixer, 4 X 1 Mixer, 2 x 6 Digital Signal Processor, Power Amplifier for Loudspeakers, Audio Switching Relay, Emergency Page Relay, Audio Equipment Rack, Rack Power Wiring, System Power Control, Audio Cassette/Compact Disc Player, Am/FM Tuner, TV Tuner, and Portable Equipment Rack and Components (Rack Mounted Mixer, Audio Cassette/Compact Disc Player, Handheld Wireless Microphone System, Portable Equipment Rack).

Base Bid shall include all associated electrical work up to the point of connection of the identified equipment such as, conduit, wiring, wall receptacles except as identified above, loudspeakers, FM RF Distribution System, and Conference room Z322 Equipment.

3.1.13 Option No. OP101.1: AUDIO/VISUAL EQUIPMENT

The work of option OP101.1 shall be included in the work of option OP101.

3.1.14 Option No. OP102: NOT USED

3.1.15 Option No. OP103: CENTRAL PAGING SYSTEM EQUIPMENT

The work of option OP103 shall be included in the work of option OP101.

3.1.16 Option No. OP104: PUNCHING BAG LIFTS

Provide for each punching bag, item number 114t, in Boxing room Y436 and Boxing room Y436 lifting winch, controls and related items including, but not limited to, framing, supports, vertical and horizontal blocks, and wire rope, to permit raising and lowering of punching bags, as indicated on drawings, including drawing A9.30, in lieu of providing punching bag hanger detail as indicated at detail 2/A9.43. Contractor shall assume that option OP106 shall be awarded for purposes of bidding this option.

3.1.17 Option No. OP105: SCOREBOARDS AND TIMING SYSTEMS

Provide all work required to provide scoreboards, shot clocks, pool timing system, mounting brackets, controllers, floor inserts, jacks, all wiring and connections to provide a fully functioning system. All work required as part of Specification Section 11482 is included in the work of this option. All associated electrical work, including conduit, pull strings in empty conduit, deck plate outlet boxes, wall plate pull box and the like up to the point of connection, and blocking/framing for support/mounting shall be provided as part of the base bid.

3.1.18 Option No. OP106: ATHLETIC EQUIPMENT

Provide all work required to provide the following athletic equipment as specified in Specification Section 11480: Wall Padding, Volleyball Standards and Net Systems, Wrestling Mats, Chinning Bars, Boxing Equipment, and Ballet Barre and Brackets.

3.1.19 Option No. OP107: BLEACHERS

Provide all work required to provide bleachers as required in Specifications including Section 12765. See Drawings including A1.0YN, A1.2YN and A1.4YN.

3.1.20 Option No. OP108: HYDROTHERAPY POOL

Provide all work required to provide Hydrotherapy Pool as required in Specification Section 13158 and as indicated. See Drawings including A1.1YS.

Floor and wall finishes shall extend fully under/around/behind hydrotherapy pool as part of base bid and as part of this option.

3.1.21 Option No. OP109: SWIMMING POOL EQUIPMENT

Provide all work required to provide the Swimming Pool Equipment as required below. See Drawings including SP series. See the Specifications including section 13154. The work of this option includes:

1. Stanchion Posts. Sockets shall be included in the work of the base bid.
2. Starting Platforms. Anchors shall be included in the work of the base bid.
3. Portable Life Guard Chairs.
4. User operable Hydraulic Disabled Access Lift. Sockets shall be included in the work of the base bid.
5. Racing Lanes and Reels.
6. Portable Vacuum System.
7. Wall Brush.
8. Water Polo Goals. Anchors shall be included in the work of the base bid.

9. Floating Water Polo Goals.
10. Pool Water Testing Kit.
11. Backstroke Pennants.
12. Safety Equipment.
13. Recall Rope.

3.1.22 Option No. OP110: THEATER CHAIRS

Provide all work required to provide a total of 70 theater chairs in the Media Room Z341. See Drawings including A1.3ZE for layout requirements and the Specifications including Section 12600.

3.1.23 Option No. OP111: RECEPTION DESK

Provide all work required to provide the guard desk in the Center Lobby room B102. See Drawings including A1.1ZE and A9.25 ~~and~~. See Specifications including Section 06400, 05500 and 09600.

3.1.24 Option No. OP112: CARPET

Provide all work required to provide carpeting and related resilient (vinyl) base. See Specifications including Sections 09000, 09650 and 09680.

Provide as part of the base bid work structural concrete slab without sealer to permit future installation of floor finish by others.

3.1.25 Option No. OP113: WALL CLOCKS

Provide all work required to provide Wall Clocks. See Drawings including A5 Series and Specifications including Section 10000.

--End of Section--

SECTION 01810

COMMISSIONING OF SYSTEMS

PART 1 GENERAL

1.1 PURPOSE

The purpose of this specification section is to commission certain of the systems within the Arvin Cadet Physical Development Center Facility.

The procedures described in this section will serve to demonstrate that the referenced systems function properly as individual systems and that the interconnections and interrelationships of the systems support the intended function of the facility.

The procedures of this section supplement and do not replace any testing required by any other section including Section 15995 COMMISSIONING OF HVAC SYSTEMS. They afford the Contactor and the Government an opportunity to prove and document that the Work was performed in accordance with the Contract, and to correct any deficiencies.

1.2 SCOPE

The contractor shall provide commissioning of the Work related to the following specification sections and systems:

a. 08330 OVERHEAD ROLLING DOORS; Proper operation of rolling door systems including safety systems, and life safety systems.
d. 08700 BUILDERS HARDWARE; Proper operation of life safety systems including door closing systems.
c. 11211 PUMPS; WATER, CENTRIFUGAL AND FUEL OIL TRANSFER; Proper operation of pump systems under emergency power including proper transfer to and from normal power.
d. 11310 PUMPS; SEWAGE AND SLUDGE; Proper operation of pump systems under emergency power including proper transfer to and from normal power.
e. 13851 FIRE DETECTION AND ALARM SYSTEM, ADDRESSABLE; Proper operation of related systems including elevator recall functions, operation of smoke exhaust systems and related HVAC, operation of smoke exhaust and HVAC systems under emergency power including proper transfer to and from normal power, release of door holder/closing devices, life safety related operation of public address/sound systems. receipt and annunciation of signals by post fire department, operation of systems under battery power and emergency power including transfer to and from normal power, operation/indication of tamper and flow switches, operation/indication of pre-action sprinkler systems, and operation of MDF room UPS and AC systems including shut down and restart.
f. 13852 FIRE ALARM REPORTING SYSTEM, RADIO TYPE; Proper operation of related systems including receipt and annunciation of signals at post fire department.

g. 13930 COMBINATION STANDPIPE/SPRINKLER SYSTEM; Proper operation of fire pump under emergency power including transfer to and from normal power.

h. 14210 ELEVATORS, ELECTRIC; Proper operation of fire alarm recall systems, operation of elevator systems including lights and communication systems under emergency power including transfer to and from normal power.

i. 15400 PLUMBING, GENERAL PURPOSE; Proper operation of domestic cold water and domestic hot water at each fixture, operation of water heaters, operation of laundry water heaters, operation of booster pump systems, and operation of sump pump systems including under emergency power and transfer to and from normal power.

j. 15556 FORCED HOT WATER HEATING SYSTEMS USING WATER AND STEAM HEAT EXCHANGERS, GLYCOL HEAT RECOVERY SYSTEM AND WORK ASSOCIATED WITH DIESEL GENERATOR INSTALLATION; Proper operation of heat exchangers for pool water heating, , operation of fuel oil pumps under emergency power including transfer to and from normal power, operation of fuel oil tank alarm systems and signaling, and operation of make-up water systems.

k. 15562 HEATING AND UTILITY SYSTEMS, CENTRAL STEAM; Proper operation of high pressure steam systems, operation of low pressure steam systems, operation of condensate pump system under full system operation loads, operation of condensate pumps under emergency power including transfer to and from normal power, and operation of first stage and second stage pressure reducing valve system.

l. 15650 CENTRAL REFRIGERATED AIR-CONDITIONING SYSTEM; Proper operation of chilled water system and condenser water system under EMCS, operation of shut-down and start-up systems upon power loss, operation of cooling tower heater operation under emergency power including transfer to and from normal power, and operation of chiller refrigerant leak detection system.

m. 15895 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM; Proper operation of smoke exhaust and make-up air system for atrium including under emergency power and during transfer to and from normal power, operation of elevator exhaust and make-up air systems under emergency power including transfer to and from normal power, operation of pool chemical storage room exhaust air systems under emergency power including transfer to and from normal power, and operation of MDF room air conditioning systems under emergency power including transfer to and from normal power.

n. 15951 DIRECT DIGITAL CONTROL FOR HVAC; Proper operation of all building systems including under emergency power and during transfer to and from normal power.

o. 16263 DIESEL-GENERATOR SET STATIONARY 100-2500 KW, WITH AUXILIARIES; Proper operation of emergency power systems including transfer to and from normal power, operation of emergency power systems under full load, and operation of fuel pump systems.

p. 16265 UNINTERRUPTIBLE POWER SUPPLY (UPS) SYSTEM ABOVE 15 KVA CAPACITY; Proper operation of UPS systems under full load, operation of transfer systems to and from normal power, and operation of maintenance by-pass systems.

q. 16410 AUTOMATIC TRANSFER SWITCHES; Proper operation of transfer systems including transfer to and from emergency power systems.
r. 16415 ELECTRICAL WORK, INTERIOR; Proper operation of emergency lights, exit signs and related life safety systems.
s. 16800 CENTRAL PAGING SYSTEM, SOUND SYSTEMS AND AUDIO-VISUAL SYSTEMS; Proper operation of fire alarm over-ride systems and operation of paging zones.

1.3 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals with "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-01 Data

Commissioning Team; FIO.

List of team members who will represent the Contractor in the pre-commissioning checks and functional performance testing, at least 2 weeks prior to the start of pre-commissioning checks. Proposed revision to the list, prior to the start of the impacted work.

SD-06 Instructions

Test Procedures; GA.

Detailed procedures for pre-commissioning checks and functional performance tests, at least 4 weeks prior to the start of pre-commissioning checks.

SD-07 Schedules

Test Schedule; GA.

Schedule for pre-commissioning checks and functional performance tests, at least 2 weeks prior to the start of pre-commissioning checks.

SD-09 Reports

Test Reports; GA.

Completed pre-commissioning checklists and functional performance test checklists organized by system and by subsystem and submitted as one package. The results of failed tests shall be included along with a description of the corrective action taken.

1.2 SEQUENCING AND SCHEDULING

The work described in this Section shall begin only after all work required in related Sections, including Section 15951 DIRECT DIGITAL CONTROL FOR HVAC, Section 15990 TESTING, ADJUSTING AND BALANCING OF HVAC SYSTEMS and Section 15995 COMMISSIONING OF HVAC SYSTEMS, has been successfully completed, and all test and inspection reports and operation and maintenance manuals required in these Sections have been submitted and approved.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.1 COMMISSIONING TEAM AND CHECKLISTS

The Contractor shall designate team members to participate in the pre-commissioning checks and the functional performance testing specified herein. In addition, the Government will be represented by a representative of the Contracting Officer, the Design Agent's Representative, and the Using Agency. The team members shall be as follows:

Designation	Function
Q	Contractor's Chief Quality Control Representative
M	Contractor's Mechanical Representative
E	Contractor's Electrical Representative
T	Contractor's Testing, Adjusting, and Balancing Representative
C	Contractor's Controls Representative
D	Design Agent's Representative
O	Contracting Officer's Representative
U	Using Agency's Representative

Each checklist shown in appendices A and B to this section shall be completed by the commissioning team. Acceptance by each commissioning team member of each pre-commissioning checklist item shall be indicated by initials and date unless an "X" is shown indicating that participation by that individual is not required. Acceptance by each commissioning team member of each functional performance test checklist shall be indicated by signature and date.

3.2 TESTS

The pre-commissioning checks and functional performance tests shall be performed in a manner which essentially duplicates the checking, testing, and inspection methods established in the related Sections. Where checking, testing, and inspection methods are not specified in other Sections, methods shall be established which will provide the information required. Testing and verification required by this section shall be performed during the Commissioning phase. Requirements in related Sections are independent from the requirements of this Section and shall not be used to satisfy any of the requirements specified in this Section. The Contractor shall provide all materials, services, and labor required to perform the pre-commissioning checks and functional performance tests. A pre-commissioning check or functional performance test shall be aborted if any system deficiency prevents the successful completion of the test or if any participating non-Government commissioning team member of which participation is specified is not present for the test. The Contractor shall reimburse the Government for all costs associated with effort lost due to tests that are aborted. These costs shall include salary, travel costs and per diem (where applicable) for Government commissioning team members.

3.2.1 Pre-Commissioning Checks

Pre-commissioning checks shall be performed for the items indicated on the checklists in Appendix A. Deficiencies discovered during these checks shall be corrected and retested in accordance with the applicable contract requirements.

All work related to pre-commissioning checklists required as a part of section 15995 COMMISSIONING OF HVAC SYSTEMS shall be completed prior to start of functional performance tests required under this section.

3.2.2 Functional Performance Tests

Functional performance tests shall be performed for the items indicated on the checklists in Appendix B. Functional performance tests shall begin only after all pre-commissioning checks have been successfully completed. Tests shall prove all modes of the sequences of operation, and shall verify all other relevant contract requirements. Tests shall begin with equipment or components and shall progress through subsystems to complete systems. Upon failure of any functional performance test checklist item, the Contractor shall correct all deficiencies in accordance with the applicable contract requirements. The checklist shall then be repeated until it has been completed with no errors.

APPENDIX A

PRE-COMMISSIONING CHECKLISTS

Pre-commissioning checklist - Wiring

For all electrical systems including, but not limited to, switch gear, transformers, conduit, conductors (wiring/cabling), junction boxes, panel boards, circuit breakers, motor controls, emergency generator, automatic transfer switches, uninterruptible power supplies (UPS), fixtures, emergency lighting, and exit signs.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Wiring complete.	___	___	___	___	___	___	___	___
b. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
c. Devices/equipment connected.	___	___	___	___	___	___	___	___
d. Protective devices provided.	___	___	___	___	___	___	___	___
e. Cover plates installed as required.	___	___	___	___	___	___	___	___
f. All testing successfully completed.	___	___	___	___	___	___	___	___
g. All metering work complete.	___	___	___	___	___	___	___	___
h. Verify that electrical work has been labeled and identified as specified.	___	___	___	___	___	___	___	___
Testing								
a. Confirm emergency generator functioning.	___	___	___	___	___	___	___	___
b. Confirm automatic transfer system functioning.	___	___	___	___	___	___	___	___
c. Confirm operation of protective devices.	___	___	___	___	___	___	___	___
d. Confirm meter functioning.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – HVAC Systems Pre-Commissioning Checklists

As required by Section 15995 COMMISSIONING OF HVAC SYSTEMS.

Checklist Item	Q	M	E	T	C	D	O	U
a. Pre-commissioning Check List - Piping complete	___	___	___	___	___	___	___	___
b. Pre-commissioning Check List - Ductwork complete	___	___	___	___	___	___	___	___
c. Pre-commissioning Check List - Variable Volume Air Handling Unit complete	___	___	___	___	___	___	___	___
d. Pre-commissioning Check List - VAV Terminals complete	___	___	___	___	___	___	___	___
e. Pre-commissioning Check List – DX Air Cooled Condensing Unit complete	___	___	___	___	___	___	___	___
f. Pre-commissioning Check List - Pumps complete.	___	___	___	___	___	___	___	___
g. Pre-commissioning Check List – Centrifugal Chiller complete.	___	___	___	___	___	___	___	___
h. Pre-commissioning Check List – Cooling Tower complete	___	___	___	___	___	___	___	___
i. Pre-commissioning Check List – Steam/Hot Water Converter complete.	___	___	___	___	___	___	___	___
j. Pre-commissioning Check List – Fan Coil Units complete.	___	___	___	___	___	___	___	___
k. Pre-commissioning Check List – Electric Unit Heaters complete.	___	___	___	___	___	___	___	___
l. Pre-commissioning Check List – Hot Water Unit Heaters complete.	___	___	___	___	___	___	___	___
m. Pre-commissioning Check List - Exhaust and Supply Fans complete.	___	___	___	___	___	___	___	___
n. Pre-commissioning Check List - Computer Room Unit complete.	___	___	___	___	___	___	___	___
o. Pre-commissioning Check List - HVAC System Controls complete.	___	___	___	___	___	___	___	___
p. Pre-commissioning Check List - Single Zone Air Handling Units complete.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – HVAC Systems Pre-Commissioning Checklists

As required by Section 15995 COMMISSIONING OF HVAC SYSTEMS.

Checklist Item	Q	M	E	T	C	D	O	U
q. Pre-commissioning Check List - Energy Recovery System complete.	___	___	___	___	___	___	___	___
Testing, Adjusting, and Balancing (TAB)								
a. TAB operation complete.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Overhead Rolling Doors

For Overhead Rolling Doors: Y020B, Y104A, Z170A and Z270A.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Door and frame installed.	___	___	___	___	___	___	___	___
b. Electrical and Fire Alarm interface wiring systems complete.	___	___	___	___	___	___	___	___
c. Door and frame finished.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to operator.	___	___	___	___	___	___	___	___
b. Power available to controls.	___	___	___	___	___	___	___	___
c. Proper motor rotation verified.	___	___	___	___	___	___	___	___
d. Fire alarm interface installed.	___	___	___	___	___	___	___	___
Controls								
a. Limit switches proper installed.	___	___	___	___	___	___	___	___
b. Controls installed within sight of door.	___	___	___	___	___	___	___	___
c. Door edge safety devices installed (door Y020B).	___	___	___	___	___	___	___	___
Testing and Adjusting								
a. Door operated manually through full range of opening.	___	___	___	___	___	___	___	___
b. Door operated electrically through full range of opening.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Door Hardware

For each fire rated door with electro-magnetic holders or closers with integral electro-magnetic holders.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Door and frame installed.	___	___	___	___	___	___	___	___
b. Hardware installed.	___	___	___	___	___	___	___	___
c. Electrical and Fire Alarm interface systems complete.	___	___	___	___	___	___	___	___
d. Door and frame finished.	___	___	___	___	___	___	___	___
e. Fire alarm system installed.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to holders.	___	___	___	___	___	___	___	___
Testing and Adjusting								
a. Door closer operation confirmed.	___	___	___	___	___	___	___	___
b. Door holder operation confirmed.	___	___	___	___	___	___	___	___
c. Fire alarm system testing complete.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Fire Detection and Alarm System, Addressable

For Fire Detection and Alarm System, Addressable.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. All devices installed.	___	___	___	___	___	___	___	___
b. All wiring installed.	___	___	___	___	___	___	___	___
c. All work complete at main panel.	___	___	___	___	___	___	___	___
d. All protective covers removed.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to fire detection and alarm system.	___	___	___	___	___	___	___	___
Testing								
a. Testing of fire detection and alarm system complete.	___	___	___	___	___	___	___	___
b. Confirm functioning of devices.	___	___	___	___	___	___	___	___
c. Confirm functioning of existing systems.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Fire Alarm Reporting System, Radio Type

For Fire Alarm Reporting System, Radio Type.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. All devices installed.	___	___	___	___	___	___	___	___
b. All wiring installed.	___	___	___	___	___	___	___	___
c. All work complete at main panel.	___	___	___	___	___	___	___	___
d. All protective covers removed.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to fire detection and alarm system.	___	___	___	___	___	___	___	___
a. Power available to fire alarm reporting system.	___	___	___	___	___	___	___	___
Testing								
a. Pre-commissioning Checklist for fire detection and alarm system complete.	___	___	___	___	___	___	___	___
b. Confirm functioning of devices.	___	___	___	___	___	___	___	___
c. Confirm functioning of voice evacuation system.	___	___	___	___	___	___	___	___
d. Confirm receipt and annunciation of signals at post fire department.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Standpipe/Sprinkler System

For Standpipe/Sprinkler System.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed.	___	___	___	___	___	___	___	___
b. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
c. Piping flushed and cleaned.	___	___	___	___	___	___	___	___
d. Valves installed as required.	___	___	___	___	___	___	___	___
e. Verify operation of valves.	___	___	___	___	___	___	___	___
f. Flow switches installed.	___	___	___	___	___	___	___	___
g. Verify operation of flow switches.	___	___	___	___	___	___	___	___
h. Pre-action systems installed.	___	___	___	___	___	___	___	___
i. Verify operation of pre-action systems.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to fire detection and alarm system.	___	___	___	___	___	___	___	___
b. Power available to fire pump.	___	___	___	___	___	___	___	___
Testing								
a. Confirm functioning of controls.	___	___	___	___	___	___	___	___
b. Confirm functioning of emergency power systems.	___	___	___	___	___	___	___	___
c. Confirm functioning of fire detection and alarm system.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Elevators

For Passenger and Freight Elevator. Does not include existing elevators.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Elevators installed.	___	___	___	___	___	___	___	___
b. All wiring installed.	___	___	___	___	___	___	___	___
c. All controls/equipment installed.	___	___	___	___	___	___	___	___
d. Communication equipment installed.	___	___	___	___	___	___	___	___
e. Sump pump installed	___	___	___	___	___	___	___	___
f. Telecommunications system installed.	___	___	___	___	___	___	___	___
g. Fire sprinkler system installed.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to elevator equipment.	___	___	___	___	___	___	___	___
b. Power available to elevator cab.	___	___	___	___	___	___	___	___
c. Power available to sump pump.	___	___	___	___	___	___	___	___
d. Telecommunications system available	___	___	___	___	___	___	___	___
Testing								
a. Testing requirements of Specification section 14210 performed, documented and submitted.	___	___	___	___	___	___	___	___
b. Confirm functioning of fire detection and alarm system.	___	___	___	___	___	___	___	___
c. Confirm functioning of fire sprinkler system	___	___	___	___	___	___	___	___
d. Confirm functioning of sump pump.	___	___	___	___	___	___	___	___
e. Confirm functioning of telecommunications system	___	___	___	___	___	___	___	___

Pre-commissioning checklist - Plumbing

For Domestic Cold Water Plumbing Systems, Domestic Hot Water Plumbing Systems, Sanitary Drain Systems, and Foundation Drain Systems.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed.	___	___	___	___	___	___	___	___
b. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
c. Piping flushed and cleaned.	___	___	___	___	___	___	___	___
d. Strainers cleaned.	___	___	___	___	___	___	___	___
e. Valves installed as required.	___	___	___	___	___	___	___	___
f. Piping insulated as required.	___	___	___	___	___	___	___	___
g. Thermometers and gauges installed as required.	___	___	___	___	___	___	___	___
h. Verify operation of valves.	___	___	___	___	___	___	___	___
i. Fixtures installed as required.	___	___	___	___	___	___	___	___
j. Fittings installed as required.	___	___	___	___	___	___	___	___
k. Verify that piping has been labeled and valves identified as specified.	___	___	___	___	___	___	___	___
l. Emergency generator installed.	___	___	___	___	___	___	___	___
m. Automatic transfer switches installed.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to booster pumps.	___	___	___	___	___	___	___	___
b. Power available to sump pumps.	___	___	___	___	___	___	___	___
c. Power available to control systems.	___	___	___	___	___	___	___	___
d. Emergency generator functioning.	___	___	___	___	___	___	___	___
Steam								
a. Steam available to domestic water heaters.	___	___	___	___	___	___	___	___
b. Steam available to laundry water heaters.	___	___	___	___	___	___	___	___

Pre-commissioning checklist - Plumbing

For Domestic Cold Water Plumbing Systems, Domestic Hot Water Plumbing Systems, Sanitary Drain Systems, and Foundation Drain Systems.

Checklist Item	Q	M	E	T	C	D	O	U
Controls								
a. Emergency power transfer systems functioning.	___	___	___	___	___	___	___	___
b. Booster pump controls functioning.	___	___	___	___	___	___	___	___
c. Sump pump controls functioning.	___	___	___	___	___	___	___	___
d. Water heater thermostats functioning	___	___	___	___	___	___	___	___
e. Confirm water heater output water temperature.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Forced Hot Water Heating Systems

For Heat Exchangers for Pool Water Heating.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Pools installed.	___	___	___	___	___	___	___	___
b. Pool piping installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Strainers cleaned.	___	___	___	___	___	___	___	___
f. Valves installed as required.	___	___	___	___	___	___	___	___
g. Piping insulated as required.	___	___	___	___	___	___	___	___
h. Pool water chemical treatment system installed.	___	___	___	___	___	___	___	___
i. Thermometers and gauges installed as required.	___	___	___	___	___	___	___	___
j. Verify operation of valves.	___	___	___	___	___	___	___	___
k. Verify that piping has been labeled and valves identified as specified.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to pool pumps.	___	___	___	___	___	___	___	___
b. Power available to pool chemical treatment control systems.	___	___	___	___	___	___	___	___
Steam								
a. Steam available to pool water heaters.	___	___	___	___	___	___	___	___
Controls								
a. Water heater thermostats functioning	___	___	___	___	___	___	___	___
b. Confirm water heater output water temperature.	___	___	___	___	___	___	___	___
c. Confirm pool water chemical treatment.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Steam/Hot Water Converter for Swimming Pools

For Converter: HX-5,6 and related piping/systems.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Pools installed.	___	___	___	___	___	___	___	___
b. Pool piping installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Pool piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Strainers cleaned.	___	___	___	___	___	___	___	___
f. Valves installed as required.	___	___	___	___	___	___	___	___
g. Pool piping insulated as required.	___	___	___	___	___	___	___	___
h. Pool water chemical treatment system installed.	___	___	___	___	___	___	___	___
i. Thermometers and gauges installed as required.	___	___	___	___	___	___	___	___
j. Verify operation of valves.	___	___	___	___	___	___	___	___
k. Verify that piping has been labeled and valves identified as specified.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to pool pumps.	___	___	___	___	___	___	___	___
b. Power available to pool chemical treatment control systems.	___	___	___	___	___	___	___	___
Steam								
a. Steam available to pool heat exchangers.	___	___	___	___	___	___	___	___
Controls								
a. Heat exchanger thermostat functioning	___	___	___	___	___	___	___	___
b. Confirm heat exchanger output water temperature.	___	___	___	___	___	___	___	___
c. Confirm pool water chemical treatment.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Steam/Hot Water Converter for Swimming Pools

For Converter: HX-5,6 and related piping/systems.

Checklist Item	Q	M	E	T	C	D	O	U
Testing, Adjusting, and Balancing (TAB)								
a. Pressure/temperature gauges installed.	___	___	___	___	___	___	___	___
b. Pool piping system cleaned.	___	___	___	___	___	___	___	___
c. Chemical water treatment complete.	___	___	___	___	___	___	___	___
d. Water balance complete.	___	___	___	___	___	___	___	___
e. Water balance with design maximum flow.	___	___	___	___	___	___	___	___
f. TAB Report submitted.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Computer Room Unit and Associated Condensing Unit

For Computer Room Unit and Associated Condensing Unit: AC-1, 2; CU-1, 2.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Indoor unit installed.	___	___	___	___	___	___	___	___
b. Outdoor unit installed.	___	___	___	___	___	___	___	___
c. Pre-commissioning per Specification Section 15995 complete.	___	___	___	___	___	___	___	___
Electrical								
a. Emergency power available to indoor unit.	___	___	___	___	___	___	___	___
b. Emergency power available to outdoor unit.	___	___	___	___	___	___	___	___
c. Indoor unit wired through MDF Room shunt trip.	___	___	___	___	___	___	___	___
d. Outdoor unit wired through MDF Room shunt trip.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Atrium Exhaust and Supply Systems

For Atrium Exhaust and Supply System involving mechanical units SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, 26.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Fan belt adjusted.	___	___	___	___	___	___	___	___
Electrical								
a. Emergency power available.	___	___	___	___	___	___	___	___
b. Proper motor rotation verified.	___	___	___	___	___	___	___	___
c. Verify that power disconnect is located within sight of the unit it controls.	___	___	___	___	___	___	___	___
Controls								
a. Fire alarm interlocks properly installed.	___	___	___	___	___	___	___	___
b. Fire alarm interlocks operable.	___	___	___	___	___	___	___	___
c. Dampers/actuators properly installed.	___	___	___	___	___	___	___	___
d. Dampers/actuators operable.	___	___	___	___	___	___	___	___
Testing, Adjusting, and Balancing (TAB)								
a. TAB results +10%/-0% to cfm shown on drawings	___	___	___	___	___	___	___	___
b. TAB Report submitted.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Chemical Storage Room Exhaust Systems

For Chemical Storage Room Exhaust Fan EF-16 under emergency power.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Fan belt adjusted.	___	___	___	___	___	___	___	___
Electrical								
a. Emergency power available.	___	___	___	___	___	___	___	___
b. Proper motor rotation verified.	___	___	___	___	___	___	___	___
c. Verify that power disconnect is located within sight of the unit it controls.	___	___	___	___	___	___	___	___
Controls								
a. Fire alarm interlocks properly installed.	___	___	___	___	___	___	___	___
b. Fire alarm interlocks operable.	___	___	___	___	___	___	___	___
c. Dampers/actuators properly installed.	___	___	___	___	___	___	___	___
d. Dampers/actuators operable.	___	___	___	___	___	___	___	___
Testing, Adjusting, and Balancing (TAB)								
a. TAB results +10%/-0% to cfm shown on drawings	___	___	___	___	___	___	___	___
b. TAB Report submitted.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Chilled Water Systems

For Chilled water Systems including piping, chillers, controls and related components.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed and pressure tested.	___	___	___	___	___	___	___	___
b. Chillers installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Pressure gauges installed.	___	___	___	___	___	___	___	___
f. Valves installed and opened as required.	___	___	___	___	___	___	___	___
g. Strainers cleaned.	___	___	___	___	___	___	___	___
h. Piping insulated as required.	___	___	___	___	___	___	___	___
i. Verify operation of valves.	___	___	___	___	___	___	___	___
j. All chilled coils installed.	___	___	___	___	___	___	___	___
k. Chilled water pumps installed.	___	___	___	___	___	___	___	___
Controls								
a. Energy management control system installed and tested.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist - Cooling Tower basin heaters on emergency power

For Cooling Tower: CT-1, 2.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Cooling tower in place.	___	___	___	___	___	___	___	___
b. Heating system installed.	___	___	___	___	___	___	___	___
Electrical								
a. Emergency power available.	___	___	___	___	___	___	___	___
Piping								
a. Tower basin clean and filled.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Condenser water piping systems

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed and pressure tested.	___	___	___	___	___	___	___	___
b. Chillers and cooling towers installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Pressure gauges installed.	___	___	___	___	___	___	___	___
f. Valves installed and opened as required.	___	___	___	___	___	___	___	___
g. Strainers cleaned.	___	___	___	___	___	___	___	___
h. Piping insulated as required.	___	___	___	___	___	___	___	___
i. Verify operation of valves.	___	___	___	___	___	___	___	___
j. Condenser water pumps installed.	___	___	___	___	___	___	___	___
Controls								
a. Energy management control system installed and tested.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – High pressure steam piping systems

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed and pressure tested.	___	___	___	___	___	___	___	___
b. Pressure reducing valve stations installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Steam piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Pressure gauges installed.	___	___	___	___	___	___	___	___
f. Valves installed and opened as required.	___	___	___	___	___	___	___	___
g. Strainers cleaned.	___	___	___	___	___	___	___	___
h. Piping insulated as required.	___	___	___	___	___	___	___	___
i. Verify operation of valves.	___	___	___	___	___	___	___	___
j. Steam available from physical plant.	___	___	___	___	___	___	___	___
Controls								
a. Energy management control system installed and tested.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Hot water piping systems

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed and pressure tested.	___	___	___	___	___	___	___	___
b. Heat exchangers installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Pressure gauges installed.	___	___	___	___	___	___	___	___
f. Valves installed and opened as required.	___	___	___	___	___	___	___	___
g. Strainers cleaned.	___	___	___	___	___	___	___	___
h. Piping insulated as required.	___	___	___	___	___	___	___	___
i. Verify operation of valves.	___	___	___	___	___	___	___	___
j. All hot water coils installed.	___	___	___	___	___	___	___	___
k. Hot water pumps installed.	___	___	___	___	___	___	___	___
Controls								
a. Energy management control system installed and tested.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Low pressure return and pumped condensate piping systems

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed and pressure tested.	___	___	___	___	___	___	___	___
b. Pressure reducing valve stations installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Steam piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Pressure gauges installed.	___	___	___	___	___	___	___	___
f. Valves installed and opened as required.	___	___	___	___	___	___	___	___
g. Strainers cleaned.	___	___	___	___	___	___	___	___
h. Piping insulated as required.	___	___	___	___	___	___	___	___
i. Verify operation of valves.	___	___	___	___	___	___	___	___
j. Steam available from physical plant.	___	___	___	___	___	___	___	___
k. Condensate return pumps installed.	___	___	___	___	___	___	___	___
Controls								
a. Energy management control system installed and tested.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Low pressure steam piping systems

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Piping installed and pressure tested.	___	___	___	___	___	___	___	___
b. Pressure reducing valve stations installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Steam piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Pressure gauges installed.	___	___	___	___	___	___	___	___
f. Valves installed and opened as required.	___	___	___	___	___	___	___	___
g. Strainers cleaned.	___	___	___	___	___	___	___	___
h. Piping insulated as required.	___	___	___	___	___	___	___	___
i. Verify operation of valves.	___	___	___	___	___	___	___	___
j. Steam available from physical plant.	___	___	___	___	___	___	___	___
Controls								
a. Energy management control system installed and tested.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Steam Pressure Reducing Valves

For Steam Pressure reducing Valves: PRV-1a, 1b, 2a, 2b, 3a, 3b, 4a, 4b, 5a, 5b, and A.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Inlet piping system installed and tested.	___	___	___	___	___	___	___	___
b. outlet piping system installed and tested.	___	___	___	___	___	___	___	___
c. Bypass piping system installed and tested.	___	___	___	___	___	___	___	___
b. Sensor tubing and components installed and tested.	___	___	___	___	___	___	___	___
Controls								
a. Sensors connected and wired to Energy management control system.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Mechanical Make-up Water Connections

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Backflow preventer installed.	___	___	___	___	___	___	___	___
b. Pressure reducing valve installed.	___	___	___	___	___	___	___	___
c. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
d. Domestic piping flushed and cleaned.	___	___	___	___	___	___	___	___
e. Piping connected between backflow preventer and mechanical piping system , and pressure tested.	___	___	___	___	___	___	___	___
f. Valves installed and opened as required.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Pumps

For Pump: P-7, 8, 9, 14, 15, 16; CP-1, 2, 3, 4; OP-1, 2; Fire Pump; Jockey Pump; Sewage Ejector Pumps; and Foundation Drainage Pumps.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Pumps grouted in place.	___	___	___	___	___	___	___	___
b. Precommissioning requirements from Specification Section 15995 complete.	___	___	___	___	___	___	___	___
Electrical								
a. Emergency power available to pump disconnect.	___	___	___	___	___	___	___	___
b. Proper motor rotation verified.	___	___	___	___	___	___	___	___
c. Control system interlock functional.	___	___	___	___	___	___	___	___
d. Emergency power interface installed.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Refrigerant leak detection system

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Leak detectors installed.	___	___	___	___	___	___	___	___
b. Chillers installed and operable.	___	___	___	___	___	___	___	___
c. Mechanical room ventilation system installed and operational.	___	___	___	___	___	___	___	___
d. Valves installed and opened as required.	___	___	___	___	___	___	___	___
Electrical								
a. Power available to leak detection system.	___	___	___	___	___	___	___	___
b. Verify that power disconnect is located within sight of the unit it controls.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Fuel Oil Tanks

For Fuel Oil tank: OT-1

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Tank installed.	___	___	___	___	___	___	___	___
b. Fuel oil piping installed.	___	___	___	___	___	___	___	___
c. Fuel oil fill and vent piping installed.	___	___	___	___	___	___	___	___
d. Fuel oil pumps installed an operating.	___	___	___	___	___	___	___	___
Controls								
a. All alarm point are connected and wired to Energy management control system.	___	___	___	___	___	___	___	___
b. Leak detectors installed and wired.	___	___	___	___	___	___	___	___
c. Fuel level detection switches installed and wired.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Energy Management Control System (EMCS) Direct Digital Control System for HVAC

For: Energy Management Control System (EMCS) Direct Digital Control System for HVAC

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Controls system user’s computer installed and functioning.	___	___	___	___	___	___	___	___
b. Control point components installed at each location required.	___	___	___	___	___	___	___	___
c. Controls sub-panels installed.	___	___	___	___	___	___	___	___
d. Pre-commissioning of all HVAC related equipment as required from Specification Section 15995 complete.	___	___	___	___	___	___	___	___
e. As-built shop drawings submitted.	___	___	___	___	___	___	___	___
Electrical								
a. Normal power available at controls systems user’s computer.	___	___	___	___	___	___	___	___
b. Normal power available at controls sub-panels.	___	___	___	___	___	___	___	___
c. Emergency power available at controls systems user’s computer.	___	___	___	___	___	___	___	___
d. Emergency power available at controls sub-panels.	___	___	___	___	___	___	___	___
Controls								
a. All control point are components are connected and wired.	___	___	___	___	___	___	___	___
b. All other alarm point components are connected and wired.	___	___	___	___	___	___	___	___
c. All related EMCS components connected and wired	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Diesel Generator Set

For: Diesel Generator Set

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Generator set installed.	___	___	___	___	___	___	___	___
b. Automatic transfer switches installed.	___	___	___	___	___	___	___	___
c. Pre-commissioning Checklist Fuel Oil Tank complete.	___	___	___	___	___	___	___	___
d. Pre-commissioning Checklist Fuel Oil Pumps complete.	___	___	___	___	___	___	___	___
e. Generator exhaust system installed, tested and insulated.	___	___	___	___	___	___	___	___
f. Generator air intake and discharge ductwork installed.	___	___	___	___	___	___	___	___
g. Generator radiator filled with fluid and tested for freeze protection level.	___	___	___	___	___	___	___	___
h. Generator radiator ventilation fan belt adjusted.	___	___	___	___	___	___	___	___
i. Generator fuel oil piping system installed and tested.	___	___	___	___	___	___	___	___
Electrical								
a. Power wiring to generator installed and connected.	___	___	___	___	___	___	___	___
b. Interconnecting wiring from generator to automatic transfer switches installed and connected.	___	___	___	___	___	___	___	___
c. Fire alarm interface wired and connected.	___	___	___	___	___	___	___	___
d. Proper generator radiator ventilation fan motor rotation verified.	___	___	___	___	___	___	___	___
Controls								
a. Generator control panel interlock properly installed.	___	___	___	___	___	___	___	___
b. EMCS alarm point interlocks properly installed.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Diesel Generator Set

For: Diesel Generator Set

Checklist Item	Q	M	E	T	C	D	O	U
c. Ventilation dampers/actuators properly installed.	___	___	___	___	___	___	___	___
d. Ventilation dampers/actuators operable.	___	___	___	___	___	___	___	___
Testing								
a. Testing requirements of Specification section 16263 performed, documented and submitted.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Automatic Transfer Switches

For: Automatic transfer Switches

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Automatic transfer switches installed.	___	___	___	___	___	___	___	___
b. All normal power and emergency power wiring installed.	___	___	___	___	___	___	___	___
c. Generator installed and complete.	___	___	___	___	___	___	___	___
Electrical								
a. Normal power available to automatic transfer switches.	___	___	___	___	___	___	___	___
b. Emergency power available to automatic transfer switches.	___	___	___	___	___	___	___	___
c. Confirm power disconnect switches installed located within sight of the unit it controls.	___	___	___	___	___	___	___	___
Controls								
a. EMCS alarm point interlocks properly installed.	___	___	___	___	___	___	___	___
Testing								
a. Testing requirements of Specification Section 16410 performed, documented and submitted.	___	___	___	___	___	___	___	___

Pre-commissioning Checklist – Central Paging System and Sound Systems

For: Central Paging System, Pool Sound Systems, DPE Weights, CS Strength Development and PE Fitness Sound Systems, Sports Medicine Sound System, Intramural Wrestling, Boxing Sound Systems, Varsity Wrestling Z220 Sound System, Gymnasium Y240 Sound System, Multi-Purpose Room #1, Media Project Room A/V System, Gymnasium Y440 Sound System.

Checklist Item	Q	M	E	T	C	D	O	U
Installation								
a. Sound system properly installed.	___	___	___	___	___	___	___	___
b. Central paging system properly installed.	___	___	___	___	___	___	___	___
Electrical								
a. Normal power available to sound system.	___	___	___	___	___	___	___	___
b. Normal power available to central paging system.	___	___	___	___	___	___	___	___
c. Fire alarm interface wired and connected.	___	___	___	___	___	___	___	___
Testing								
a. Confirm functioning of fire detection and alarm system.	___	___	___	___	___	___	___	___
b. Testing requirements of Specification Section 16800 performed, documented and submitted.	___	___	___	___	___	___	___	___

APPENDIX B

FUNCTIONAL PERFORMANCE TESTS CHECKLISTS

Functional Performance Test Checklist - Overhead Rolling Doors

For Doors Y020B, Y104A, Z170A, and Z270A

1. Functional Performance Test: Contractor shall verify operation of the overhead rolling door as per specifications including the following:

a. Upon activation of fire alarm overhead door automatically closes _____

b. Electric operation to open door resets automatic closing device _____

c. Safety edge stops door when obstruction encountered (door Y020B). Contractor shall measure pressure exerted by door on cross member before reverse of motion.

(1) Full open position (top of opening) _____

(2) 3/4 opening height _____

(3) 1/2 opening height _____

(4) 1/4 opening height _____

(5) Closed position (bottom of opening) _____

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

Functional Performance Test Checklist – Door Hardware

For each fire rated door with electro-magnetic holders of closers with integral electro-magnetic holders.

1. Functional Performance Test: Contractor shall verify automatic closing of the door upon activation of the fire alarm system as per specifications including the following:

a. Door in fully open/ held position. Upon activation of fire alarm system to alarm door automatically closes and latches: _____

b. After restoration of fire alarm system to normal status holder re-energized and holds door: _____

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

	Signature and Date
Contractor's Chief Quality Control Representative	_____
Contractor's Mechanical Representative	_____
Contractor's Electrical Representative	_____
Contractor's Testing, Adjusting and Balancing Representative	_____
Contractor's Controls Representative	_____
Contracting Officer's Representative	_____
Using Agency's Representative	_____

Functional Performance Test Checklist – Pumps

For Pump: P-7, 8, 9, 14, 15, 16; CP-1, 2, 3, 4; OP-1, 2; Fire Pump, Jockey Pump; Sewage Ejector Pumps; Sump Pumps; and Foundation Drainage Pumps.

Prior to performing this checklist, ensure that for closed loop systems, system is pressurized and the make-up water system is operational or, for open loop systems, that the sumps are filled to the proper level. Pumps shall be operating on normal power before beginning tests.

1. Activate pump start under emergency power using control system commands (all possible combination, on/auto, etc.). ON_____ AUTO_____ OFF_____

2. Verify pump inlet/outlet pressure reading, compare to Testing, Adjusting, and Balancing (TAB) Report, pump design conditions, and pump manufacturer's performance.

	DESIGN	TAB	ACTUAL
Pump inlet pressure (psig)	_____	_____	_____
Pump outlet pressure (psig)	_____	_____	_____

3. Verify under emergency power motor amperage each phase and voltage phase to phase and phase to ground for both the full flow and the minimum flow conditions.

a. Full flow:

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage		_____	_____
Voltage		_____	
Voltage to ground	_____	_____	_____

b. Minimum flow:

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage		_____	_____
Voltage		_____	
Voltage to ground	_____	_____	_____

4. Unusual vibration, noise, etc.

_____

_____

5. Verify pumping system proper start up during transfer between power systems.

a. Changeover from normal power to emergency power: _____

b. Changeover from emergency power to normal power: _____

Functional Performance Test Checklist – Pumps

For Pump: P-7, 8, 9, 14, 15, 16; CP-1, 2, 3, 4; OP-1, 2; Fire Pump, Jockey Pump; Sewage Ejector Pumps; Sump Pumps; and Foundation Drainage Pumps.

6. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

Functional Performance Test Checklist – Elevators (not including existing elevators)

For: Passenger and Freight Elevator.

1. Functional Performance Test: Contractor shall verify operation of the elevator as per specification including the following:

a. The following shall be verified when the elevator is operated under normal power and activation of heat detector in machine room:

(1) For elevator in motion: Verify elevator travels to nearest non-fire floor level, opens door, and shut down of power.
_____

(2) For elevator stopped at each landing with doors open: Verify elevator doors remain open and shut down of power.
_____

(3) For elevator stopped at each landing with doors closed: Verify elevator doors open and shut down of power.
_____

b. The following shall be verified when the elevator is operated under normal power and activation of heat detector in hoistway:

(1) For elevator in motion: Verify elevator travels to nearest non-fire floor level, opens door, and shut down of power.
_____

(2) For elevator stopped at each landing with doors open: Verify elevator doors remain open and shut down of power.
_____

(3) For elevator stopped at each landing with doors closed: Verify elevator doors open and shut down of power.
_____

c. The following shall be verified when the elevator is operated under normal power and activation of flow switch for sprinkler heads in machine room:

(1) For elevator in motion: Verify elevator travels to nearest non-fire floor level, opens door, and shut down of power.
_____

(2) For elevator stopped at each landing with doors open: Verify elevator doors remain open and shut down of power.
_____

(3) For elevator stopped at each landing with doors closed: Verify elevator doors open and shut down of power.
_____

Functional Performance Test Checklist – Elevators (not including existing elevators)

For: Passenger and Freight Elevator.

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Controls Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

Functional Performance Test Checklist – Elevator Machine Room Exhaust and Supply Fans

For Fans: SF-12, 13, EF-12, 13.

1. Functional Performance Test: Contractor shall verify operation of supply or exhaust unit as per specification including the following:

   a. The following shall be verified when the supply and exhaust fans operating mode is initiated under emergency power:

      (1) All dampers in normal position. _____

      (2) System safeties allow start if safety conditions are met._____

   b. Occupied mode of operation

      (1) Intake air damper modulates to maximum position. _____

      (2) Discharge air damper modulates to maximum position. _____

   c. The following shall be verified when the fan is initiated:

      (1) All dampers in normal position. _____

      (2) All valves in normal position. _____

2. Verify fan system proper start up during transfer between power systems.

   a. Changeover from normal power to emergency power: _____

   b. Changeover from emergency power to normal power: _____

3. Controls Test – All Systems Combined

   a. Normal Power

      (1) Activate fan system smoke detector under normal power. _____

      (2) Verify all dampers associated with supply and exhaust fans modulate to required positions. _____

      (3) Verify supply and exhaust fans start and operate. _____

      (4) Verify EMCS recognizes these operations. _____

      (5) Verify fire alarm recognizes these operations. _____

      (6) Disable these operations via the fire alarm system at the fire commend center _____

Functional Performance Test Checklist – Elevator Machine Room Exhaust and Supply Fans

For Fans: SF-12, 13, EF-12, 13.

b. Emergency Power

(1) Activate fan system smoke detector under normal power. _____

(2) Verify all dampers associated with supply and exhaust fans modulate to required positions. _____

(3) Verify supply and exhaust fans start and operate. _____

(4) Verify EMCS recognizes these operations. _____

(5) Verify fire alarm recognizes these operations. _____

(6) Disable these operations via the fire alarm system at the fire commend center _____

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

Functional Performance Test Checklist – Atrium Exhaust and Supply Systems

For Air Handling Unit: SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, 26, RF-18, 26.

1. Functional Performance Test: Contractor shall verify operation of supply or exhaust unit as per specification including the following:

a. The following shall be verified when the supply and exhaust fans operating mode is initiated under emergency power:

(1) All dampers in normal position. _____

(2) All valves in normal position (HV-18, 26) _____

(3) System safeties allow start if safety conditions are met._____

b. Occupied mode of operation – economizer de-energized (HV-18, 26).

(1) Outside air damper at maximum position (HV-18, 26). _____

(2) Return air damper closed. _____

(3) Relief air damper closed. _____

(4) Steam control valve modulating to maintain space heating temperature set point input from outside air temperature controller. _____

c. Occupied mode of operation – SSF-1, 2, 3; SEF-1, 2, 3, 4

(1) Intake air damper modulates to maximum open position. _____

(2) Discharge air damper modulates to maximum open position. _____

d. The following shall be verified when the fan is initiated:

(1) All dampers in normal position. _____

(2) All valves in normal position. _____

e. Verify safety shut down initiated by smoke detectors. _____

2. Verify fan system proper start up during transfer between power systems.

a. Changeover from normal power to emergency power: _____

b. Changeover from emergency power to normal power: _____

3. Controls Test – All Systems Combined

a. Normal Power

(1) Activate atrium smoke detector. _____

Functional Performance Test Checklist – Atrium Exhaust and Supply Systems

For Air Handling Unit: SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, 26.

(2) Verify all dampers associated with SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, and HV-26 modulate to required positions. _____

(3) Verify SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, and HV-26 start and operate. _____

(4) Verify shut down of RF-18 and 26. _____

(5) Verify EMCS recognizes these operations. _____

(6) Verify fire alarm recognizes these operations. _____

(7) Disable these operations via the fire alarm system at the fire commend center _____

b. Emergency Power

(1) Activate fan system smoke detector under normal power. _____

(2) Verify all dampers associated with SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, and HV-26 modulate to required positions. _____

(3) Verify SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, and HV-26 start and operate. _____

(4) Verify shut down of RF-18 and 26. _____

(5) Verify EMCS recognizes these operations. _____

(6) Verify fire alarm recognizes these operations. _____

(7) Disable these operations via the fire alarm system at the fire commend center _____

Functional Performance Test Checklist – Atrium Exhaust and Supply Systems

For Air Handling Unit: SSF-1, 2, 3; SEF-1, 2, 3, 4; HV-18, 26.

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

	Signature and Date
Contractor's Chief Quality Control Representative	_____
Contractor's Mechanical Representative	_____
Contractor's Electrical Representative	_____
Contractor's Testing, Adjusting and Balancing Representative	_____
Contractor's Controls Representative	_____
Contracting Officer's Representative	_____
Using Agency's Representative	_____

Functional Performance Test Checklist - Air Cooled Condensing Unit

For Condensing Unit: CU-1, 2, 3, 4.

1. Functional Performance Test: Contractor shall demonstrate operation of refrigeration system as per specifications including the following: Start building air handler to provide load for condensing unit. Activate controls system start sequence as follows under emergency power.

a. Start air handling unit. Verify control system energizes condensing unit start sequence. _____

b. Shut off air handling equipment to verify condensing unit de-energizes. _____

c. Restart air handling equipment one minute after condensing unit shut down. Verify condensing unit restart sequence. _____

d. Verify unit shut down in the event the MDF room shut trip switch is triggered.

2. Verify condensing unit amperage each phase and voltage phase to phase and phase to ground.

	PHASE 1	PHASE 2	PHASE 3
Amperage	_____	_____	_____
Voltage		_____	_____
Voltage		_____	
Voltage to ground	_____	_____	_____

3. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing _____

Contractor's Controls Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

Functional Performance Test Checklist - Computer Room Unit

For Computer Room Unit: AC-1, 2.

1. Functional Performance Test: Contractor shall verify operation of computer room unit as per specification including the following under emergency power:

a. System safeties allow start if safety conditions are met. _____

b. Verify cooling and heating operation by varying thermostat set point from space set point to space set point plus 10 degrees, space set point minus 10 degrees, and returning to space set point. _____

c. Verify humidifier operation by varying humidistat set point from space set point to space set point plus 20 percent RH, and returning to space set point. _____

d. Verify that airflow is within +10/-0 percent of design airflow. _____

e. Verify unit shut down during fire event initiated by smoke/heat sensors. _____

f. Verify unit shut down in the event the MDF room shunt trip swicth is triggered. _____

2. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing Representative _____

Contractor's Controls Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

Functional Performance Test Checklist – Emergency Generator and Automatic Transfer Switches

1. Functional Performance Test: Contractor shall demonstrate operation of emergency generator system including automatic transfer switches as per specifications including the following:

2. Document and witness startup, checkout and testing by factory representative as specified and including the following:

a. Safeties and alarms (including high and low oil pressure, high temperature, over-speed, derangements, etc.) _____

b. Sequences of operation with load bank: From a cold start, verify starting functions by recording times for

(1) engine start _____

(2) ATS transfer ON _____

(3) delay to OFF _____

(4) engine cool down _____

c. Load bank generator to 100% for 2 hours. Record every 5 minutes: volts & amps (each phase), frequency, using load profiler, engineer coolant temp. and oil pressure. _____

d. Voltage and frequency regulation over various loads. Verify that frequency and voltage is within specified ranges at steady state and step loads of 0%-50%, 0%-100%, 100%-50% and 50%-100% in that order using a power line load profiler. Verify that frequency stability (rate of change) is adequate _____

e. Using actual building emergency loads, tune the generator output frequency and voltage for use by the UPS, using a load profiler or oscilloscope _____

f. Verify annunciations to remote monitoring sites _____

g. Verify positive mechanical interlocking of ATS between normal and generator sources _____

h. Simulate loss of normal power _____

i. Simulate loss of emergency power _____

j. During the above tests use an infrared meter on the ATS contacts to check for hot spots and significant variations between contracts _____

Functional Performance Test Checklist – Emergency Generator and Automatic Transfer Switches

3. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

	Signature and Date
Contractor's Chief Quality Control Representative	_____
Contractor's Mechanical Representative	_____
Contractor's Electrical Representative	_____
Contractor's Testing, Adjusting and Balancing	_____
Contractor's Controls Representative	_____
Contracting Officer's Representative	_____
Using Agency's Representative	_____

Functional Performance Test Checklist – UPS

1. Functional Performance Test: Contractor shall demonstrate operation of UPS system as per specifications including the following:

2. Document and witness startup, checkout and testing by factory representative as specified and including the following:

a. By actual power outage, verify sequence of operation of UPS under load _____

b. Verify at what voltage UPS starts _____

c. Time to transfer back to utility power _____

d. Verify proper frequency window and slew rate with power-line analyzer _____

e. Partially drain batteries to 50% and verify charging sequences _____

f. Verify annunciations to remote monitoring sites _____

g. Verify operation of EPO _____

h. During the above tests use an infrared meter on the UPS contacts and check for hot spots and significant variations between contracts _____

3. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Mechanical Representative _____

Contractor's Electrical Representative _____

Contractor's Testing, Adjusting and Balancing _____

Contractor's Controls Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

Functional Performance Test Checklist – Central Paging System and Sound Systems

For: Central Paging System, Pool Sound Systems, DPE Weights, CS Strength Development and PE Fitness Sound Systems, Sports Medicine Sound System, Intramural Wrestling, Boxing Sound Systems, Varsity Wrestling Z220 Sound System, Gymnasium Y240 Sound System, Multi-Purpose Room #1, Media Project Room A/V System, Gymnasium Y440 Sound System.

1. Functional Performance Test: Contractor shall demonstrate operation of central paging system, sound systems and audio-visual systems as per specifications including the following:

2. The following shall be verified when the central paging system is in use and fire alarm system is in normal condition:

a. Upon initiation of alarm condition in fire alarm system: Verify activation of relay and disabling of system including loudspeaker/speakers systems at each zone. _____

b. Upon resetting to normal condition of fire alarm system: Verify enabling of loudspeaker/speaker system at each zone. _____

3. The following shall be verified for each sound system when in use and fire alarm system is in normal condition:

a. Upon initiation of alarm condition in fire alarm system: Verify activation of relay and disabling of system including loudspeaker/speakers/system. _____

b. Upon resetting to normal condition of fire alarm system: Verify enabling of loudspeakers/speakers/system. _____

4. Certification: We the undersigned have witnessed the above functional performance tests and certify that the item tested has met the performance requirements in this section of the specifications.

Signature and Date

Contractor's Chief Quality Control Representative _____

Contractor's Electrical Representative _____

Contracting Officer's Representative _____

Using Agency's Representative _____

- - End of Section - -

SECTION 14440

SCISSOR LIFTS

PART 1 - GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

MH29.1 – 1994	Safety Requirements for Industrial Scissor Lifts

CODE OF FEDERAL REGULATIONS (CFR)

29 CRF 1910	OSHA Safety and Health Regulations

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(1999) National Electric Code

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE J517 (2001)	Hydraulic Hose

1.2 SUBMITTALS

Government approval is required for submittals with a "GA" designation; submittals having a "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-04 Drawings

Scissors Lift Shop Drawings; GA.

Detail drawings, including complete wiring and schematic diagrams for the equipment furnished, equipment layout, and any other details required to demonstrate that the system has been coordinated and will properly function as a unit.

SD-06 Instructions

Scissors Lift System; GA.

Six complete copies of operating instructions outlining step-by-step procedures required for system startup, operation, and shutdown. The instructions shall include the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and their basic operating features. Six copies of maintenance instructions listing routine maintenance procedures, possible breakdowns and repairs, and troubleshooting guide.

Training; FIO.

Training course for the operation and maintenance staff. The course shall be conducted in the building where the system is installed or as designated by the Contracting Officer. The training period shall

consist of not less than 1/8 training day (1 hour) and shall be provided after the system is functionally completed but prior to final acceptance tests. The instructions shall cover all of the items contained in the operating and maintenance instructions.

1.3 REGULATORY REQUIREMENTS

Comply with the requirements of ANSI MH29.1 and 29 CFR 1910.

1.4 WARRANTY

Provide manufacturer’s standard 5 year structural and power unit systems warranty.

1.5 TESTS

Perform operational and acceptance tests required by authorities having jurisdiction or as required below. Do not permit any use of scissors lift until permitted by authorities having jurisdiction or the government.

Load scissors lift to its rated capacity and operate continuously over its entire travel distance for a period of not less than 30 minutes. Record temperature rise of motors and pumps and pressure in hydraulic systems. Report all results in writing. Lift manufacturer shall review test results and confirm acceptability of results. Where results are not acceptable to lift manufacturer, provide corrective work as acceptable to the contracting officer to achieve lift manufacturer’s acceptance at no additional cost to the government.

Notify Contracting Officer and authorities having jurisdiction at least 36 hours in advance of tests to be performed.

PART 2 - PRODUCTS

2.1 GENERAL

One or more manufacturer's names and models are listed for items specified below. These names and models are listed to set the standard of quality and design required. Provide the specified item as modified, or an equal product in appearance and performance from one of the other manufacturers listed which meet or exceed the standard of quality and design as judged solely by the Contracting Officer. Obtain scissors lift components from only one manufacturer.

2.2 MANUFACTURERS

Provide pre-engineered, packaged scissors lift units, manufactured by Advance Lifts, Inc., St. Charles, IL; Autoquip Corp., Guthrie, OK; Blue Giant Corp., Pell City, AL; Pentalift Equipment Corp., Buffalo, NY., or approved equal where indicated on the drawings.

2.3 PRODUCTS

Provide stationary, scissors-type hydraulic dock lift designed for permanent exposed exterior, recessed installation in preformed concrete pit as indicated on Drawings, model 3300 dock lift as manufactured by Advance Lifts, Inc., or equal by another specified manufacturer, as required and as modified below. Dock lift shall be 10,000 pound capacity.

2.3.1 Platform

Provide platform 72 inches wide by 96 inches long. Platform shall be steel checker/non-skid plate surface on steel frame with 8 inch, beveled steel toe guard skirt. Provide built-in folding/hinged maintenance leg/strut.

Provide hinged bridge plate at short side of platform at fixed pivot end. Hinged bridge plate shall match platform construction and be 36 inches long by 72 inches wide. Bridge plate shall have corrosion resistant lift chain at each end connected to rails. Bridge plate shall be connected to platform by continuous piano hinge. Bridge plate edge shall be chamfered.

Provide removable 42 inch high, 1 1/2 inch diameter steel pipe rails with matching mid rails and posts and 4 inch high kick plates on long sides of platform. Rail sockets shall be flush with platform surface. Provide corrosion resistant safety chains and hooks at short sides of platform.

2.3.2 Lift Base

Provide manufacturer’s standard steel scissors mechanism with full perimeter steel angle base frame. Scissors legs shall be not less than 3/4 inch thick steel. Pivot points shall be hard-chromed with maintenance free, permanently lubricated bearings. Provide paired, hard-chromed hydraulic rams with self-adjusting seals and hydraulic velocity fuses. Lift vertical travel shall be 58 inches total. Lowered height shall be 15” maximum.

Provide lift manufacturer’s standard full perimeter accordion safety skirting at lift base. Accordion safety skirting shall be bellow style of reinforced vinyl coated polyester extending from angle base frame to underside of platform to fully enclose lift mechanism. Accordion safety skirting colors shall be alternating yellow and black.

2.3.3 Pit Face/Edge Frame

Provide full perimeter pit face/edge frame of 3 inch by 3 inch by 1/4 inch minimum galvanized steel conforming to the requirements of Section 05500 MISCELLANEOUS METAL. Pit face/edge frame shall extend full vertical and horizontal perimeter of pit opening. Miter, weld and grind smooth corners before galvanizing. Pit face/edge angle shall be embedded in concrete pit construction.

2.3.4 Power Unit

Provide remote mounted, 208 volt AC, 3 phase, 5 horse power electric/hydraulic power unit. Power unit shall be mounted not more than 30 feet from lift in room Z194 Unloading as directed by Contracting Officer. Power unit shall have single steel base frame suitable for all components and shall be pre-wired, pre-piped and ready for connections and service. Power unit shall include UL listed continuous duty motor, motor starter, high-pressure gear pump, manifold, oil filters, oil reservoir, reservoir immersion heater, pressure relief valve, holding check valve, fixed pressure compensated flow control valve, lowering solenoid valve and fuse protected control voltage transformer. Provide manufacturer’s recommended hydraulic oil. Dock lift travel speed shall be 8 feet per minute up or down.

Provide 1/2 inch diameter SAE J517, type 100R2 hydraulic pressure hose from power unit to lift. Provide required hydraulic hose in 3 inch diameter PVC conduit from power unit to lift. PVC conduit shall conform to the requirements of Section 16375 ELECTRICAL DISTRIBUTION SYSTEM, UNDERGROUND. Provide smooth radius bends in conduit of not

less than 15 inch radius to permit insertion of hydraulic pressure hose/fittings.

Provide removable wire guard to cover exposed faces of power unit conforming to the requirements of Section 10000 MISCELLANEOUS SPECIALTIES, except full perimeter frame of not less than 1 inch by 1 inch by 1/8 inch steel angle shall be provided. Provide code or regulation required access to components.

2.3.5 Control Station

Provide remote, wall mounted, 24 volt control station with continuous contact type “UP” and “DOWN” buttons with key lockout. Keying shall be to building system in accordance with the requirements of Section 08700 BUILDERS’ HARDWARE. Control station enclosure shall be NEMA 12, oil and dust resistant type. Control station shall be mounted not more than 30 feet from power unit in room Z194 Unloading as directed by Contracting Officer.

2.3.6 Finish

Provide manufacturer’s recommended rust inhibitive primer on all exterior steel components with manufacturer’s recommended baked enamel finish coat. Provide manufacturer’s recommended alkyd enamel on all interior components. Platform, lift base and power unit surfaces shall be brown color acceptable to contracting officer. Rails shall be yellow. Beveled toe guard platform edge shall have 2 inch high minimum band of alternating black and yellow diagonal stripes.

Provide touch up paints for Government maintenance purposes. Touch up paint shall match finish coat colors for platform and for rails. Touch up paint shall be in un-used, one pint spray cans of each color.

2.3.7 Electrical Work

Provide all necessary electrical work including receptacles, junction boxes, wiring, conduit and the like to provide proper electrical power to power unit and control station. Electrical work shall be in conformance with NFPA 70 and the requirements of Section 16415 ELECTRICAL WORK, INTERIOR.

PART 3 - EXECUTION

3.1 COORDINATION

Contractor shall coordinate scissors lift work requirements with the work of other trades to avoid project delays and to ensure coordination of the work. Provide pit dimensions and shape as required with connections and rough-in work properly positioned. Confirm power unit and control station locations with contracting officer before proceeding with the work.

Coordinate electrical provisions including, but not limited to, rough-in locations, voltage, phasing, disconnect ratings and circuit breaker sizes.

3.2 INSPECTION

The scissors lift installer shall examine substrates, supports, supporting structure, and conditions under which this work is to be performed and notify Contractor, in writing, of conditions detrimental to the proper completion of the work. Contractor shall correct conditions found to be detrimental at no cost to the

government and to the satisfaction of the contracting officer. Do not proceed with work until unsatisfactory conditions are corrected. Beginning work means Installer accepts substrates, supports, and other conditions.

3.3 FABRICATION

Lift shall be factory assembled, finished and ready for installation. Weld connections where ever possible or for connections which do not need future adjustment, replacement or routine maintenance. Exposed welds shall be filled and ground smooth. Confirm movement of pivots/axles/rods for fully range of motion required. Finish lift components after fabrication, but before final assembly.

Power unit shall be fully assembled with all components wired, piped and finished, ready for installation. Confirm fit of wire guard over power unit and required access points for electrical and hydraulic connections.

3.4 INSTALLATION

Strictly comply with manufacturer's instructions and recommendations, except where more restrictive requirements are specified in this section.

Install conduit to receive hydraulic pressure hose sloped to drain to lift pit. After installation of hydraulic pressure hose seal pit and building end of conduit to prevent the entrance of air, water, dust or vermin.

Install pit face/edge frame properly embedded in surrounding concrete construction.

Install work plumb and accurately located in pit. Platform surface shall be flush with surrounding surfaces with a uniform space between pit face/edge angle and platform edge. Shim unit level and aligned as acceptable to contracting officer. Anchor base frame to pit floor with anchor bolts at locations recommended by lift manufacturer to prevent displacement during use. Fully grout under base frame in accordance with the requirements of Section 05500 MISCELLANEOUS METAL for miscellaneous bearing and leveling plates.

Mount power unit at location directed by contracting officer. Provide base frame with sound and vibration isolating mounts to prevent transmission of noise to structure. Secure base frame to building slab with anchor bolts at locations recommended by lift manufacturer to prevent displacement during operation.

Mount control station to wall at location directed by contracting officer.

Properly connect hydraulic and electrical systems as required. Hydraulic pressure hose shall be free of sharp bend, kinks and strain. Provide flexible connections in electrical and hydraulic systems between power unit and building mounted components.

3.5 START-UP, ADJUSTING, CLEANING, PROTECTION

Fill lift systems with oil as recommended by lift manufacturer. Properly remove all air from system. Confirm proper functioning of motors, pumps, valves, controls and the like.

Provide operational tests as required above. Adjust operating parts to work easily, smoothly, and correctly. Correct deficient condition/work. Where work can not be corrected to the satisfaction

of the lift manufacturer and the contracting officer, such work shall be removed and replaced at no additional cost to the government.

Touch-up damaged coatings and finishes to eliminate evidence of repair. Remove and replace work which cannot be satisfactorily repaired.

Clean exposed surfaces using materials and methods recommended by manufacturer of material or product being cleaned. Remove and replace work that cannot be successfully cleaned.

3.6 DEMONSTRATION

Provide and review maintenance manual, demonstrate equipment, and instruct Government representatives in routine maintenance and proper operation procedures. Instruct Government representatives in procedures to follow to check for sources of malfunctions and operational failures. Review procedures and responsibilities of warranty.

3.7 PROTECTION

Contractor shall not use lift unless approved in writing by the contracting officer.

Provide temporary protection to ensure work being without damage or deterioration at time of final acceptance. Remove protections and reclean as necessary immediately before final acceptance.

--End of Section--